

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

MARCH 1941

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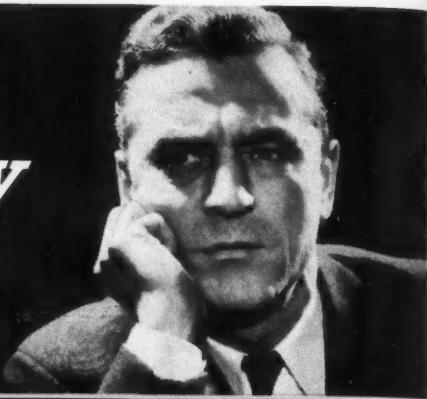
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Q.

*How can I cut my
hauling costs?*



A.

*Look and Save! Buy the
One-Two-Three Way...*

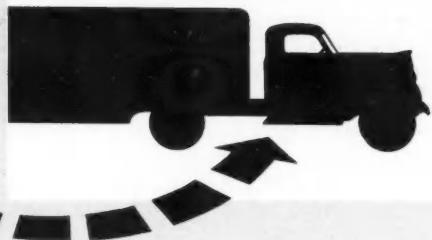
1. LOOK AT
Low-Priced Truck "A"



2. LOOK AT
Low-Priced Truck "B"



3. THEN LOOK AT
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MARCH, 1941

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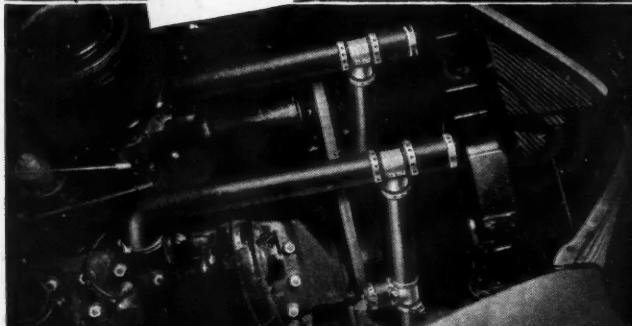
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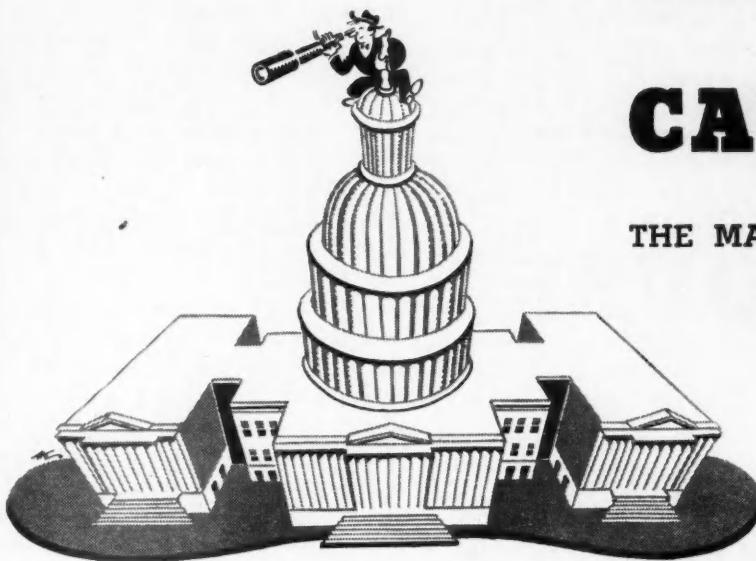
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COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS



LEGISLATIVE LOOKOUT

State Capitols Weigh Bills to Ease Weight-Length Limits; to Raise Taxes; to Further Restrict Some Truck Classes

WHILE the Federal Congress continues to debate matters of national and international defense, 42 state legislatures continue to lay down an unprecedented barrage of new bills which, if enacted, would markedly effect the trucking industry. Nevada legislature convened

since the last issue went to press.

A few general trends are at once apparent in this maze of legislation. Four states, for instance, have bills afoot that would levy a higher tax on gasoline. Others are trying to make permanent or at least to continue the present so-called "emer-

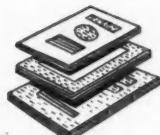
gency" taxes on gasoline, and only one state has made a serious effort to reduce its tax. Meanwhile a number of other states are planning to levy a tax on diesel fuels or a flat-rate tax on vehicles not using gasoline.

A conscientious effort to raise the gross weight limit, especially in states which are recognized as serious bottle-necks, is evidenced by the fact that 12 legislatures are considering measures that would accomplish this end. The most notable effort is in Texas where the introduction of several bills would forecast at least partial relief from present restrictions.

Double-deck auto transports are under fire in four states and there are indications of heavy restrictions

(TURN TO PAGE 98, PLEASE)

FREE BOOKS



... a special selection made by the editors ... to get your copy, just check the letter on the post card between pages 118 and 119 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

Bearing Service Manual

Billed as "the biggest piece of bearing service information ever offered without cost," a new 40-page Engine Bearing Service Manual from Federal-Mogul Corp. should find a welcome in every fleet shop.

Common troubles, recommended service procedure, data on various types of bearings, standard clearances, and descriptions of latest service tools are included. Check "A" on the post card.

Cummins Engine Catalog

The latest catalog from Cummins Engine Co. gives essential specifications of each of the company's five diesel models, ranging from the four-cylinder 251-cu.-in. model AA-400 to the 672-cu.-in., six-cylinder, super-charged HBS-600. Specification tables and power charts are included. Check "B" on the post card.

Essolube HD Booklet

A well-illustrated 16-page booklet by Standard Oil Co. of N. J. describes the properties of Essolube HD, its new high-viscosity-index, detergent-type, high-stabil-

ity oil. Of special interest is the explanation of laboratory tests which evaluate the performance of compounded oils. Check "C" on the post card.

Diesel Lube Data

Lubrication problems of modern high-speed diesel engine are discussed in a 16-page booklet offered as a companion piece to "C" above and also published by Standard Oil Co. of N. J. Well illustrated; recommended to all diesel users. Check "D" on the post card.

"Meehanite Castings"

A collection of articles describing the manufacture and use of Meehanite Castings (most common application in the truck field is for brake drums) has been compiled by the Meehanite Research Institute. (TURN TO PAGE 90, PLEASE)



EDITORIAL COMMENT BY GEORGE T. HOOK, EDITOR

1. A Discussion of Capacity Rating Methods and a Suggestion for Reconciling Differences . . . 2. Count This Progress

THE Society of Automotive Engineers and the truck members of the Automobile Manufacturers Association are agreed that the industry needs a method of indicating the capacity rating of trucks which, because of its uniformity, would promote certain desirable ends.

As reported elsewhere in this issue, the engineers recommend that the capacity rating be stated in terms of five factors: Maximum Gross Vehicle Weight, Maximum Gross Combination Weight (if the vehicle is to be used as a tractor-truck), Maximum Gross Carrying Capacity, Maximum Authorized Tire Equipment, and Structural Chassis Weight.

The engineers want the data applying to these five factors placed on a

plate which would also contain the manufacturer's name, the model designation, the chassis number and the Certified Net Horsepower at r.p.m. of the engine. The plate would be affixed to the vehicle to which the data applied.

The manufacturers favor such a plate but want it to contain only one of the five factors—Maximum Gross Vehicle Weight. Their reasoning is that the prime purpose of a capacity rating method is to promote a uniform basis on which trucks will be licensed. They argue that if five rating factors are placed on the plate, this uniformity will not be promoted as rapidly as it would be if only one factor were stated. Five factors on the plate would give state authorities

even a more chaotic choice of licensing methods than they now exercise. Since the engineers and manufacturers are agreed that so-called nominal tonnage ratings are obsolete and should not be used to designate the capacity rating of a truck, the 16 states which now license trucks on a manufacturer's tonnage rating basis may be persuaded to make a change. When they get around to making the change, both engineers and manufacturers are agreed that the switch should be to Maximum Gross Vehicle Weight, which is now used by 19 states and which is the best index of highway use. This being so, the manufacturers contend that uniformity is more likely to be promoted by having a capacity rating method which focuses the attention of administrators, legislators and regulators on one factor and one alone—Maximum Gross Vehicle Weight.

This reasoning of the manufacturers is, of course, directed solely at a solution of the political problem which truck capacity ratings present. It is a very important problem and the manufacturers' approach to a solution has the force of logic and of simplicity behind it.

The engineers, in setting up their capacity rating method, did not concern themselves with politics. As engineers they approached truck ratings as an engineering problem and they came up with an engineered solution. They kept constantly before them the needs of truck users. To serve these needs they decided that truck users should be provided with five rating factors.

Except for one factor—Structural Chassis Weight, a figure which hitherto manufacturers have not been called

CCJ



QUIZ



By
ROBERT
F. BAHL

"Quite queer quiz questions," quoth Quentin, questing quota quickly. See how quickly you can reach your quota . . . amateur, 50 points; just so-so, 70 points; expert, 90 points. You score 10 points for each correct answer.

(Correct Answers on Page 84)

1.

If you wanted a "vapor lock" on your truck, you'd find the quickest way to get it would be to . . .

- Write directly to the factory for it.
- Have a local mechanic construct one for you.
- Overheat the carburetor and fuel line.

2.

If you overheard a couple of fellows talking about "split skirt" design, you'd

know that the subject of conversation was . . .

- Aluminum piston construction.
- Oil pans.
- The new Reo models.
- Women's riding habits in the gay nineties.

3.

"Oil's well" if you can answer this one. Which of these would make the best lubricant for a racing car?

- Castor oil.
- Olive oil.
- Penetrating oil.
- Peanut oil.

4.

You've seen it a thousand times, but we're wagering you couldn't point it out to save your neck. Where would you

upon to supply—the manufacturers do not dispute the engineers' recommendations as they apply to users' needs. The manufacturers agree that users of trucks need to know more about a truck's capacity than do politicians. Such controversy as exists is not with regard to what shall be provided trucks users but what shall be stated on the vehicle plate. The manufacturers concede the importance to users of the Maximum Gross Combination Weight, Maximum Gross Carrying Capacity and Maximum Authorized Tire Size factors. They are prepared to furnish the first two "upon request." They do not dispute the importance of Maximum Authorized Tire Size but they believe that imminent changes in tire capacity ratings warrant postponement of consideration of this factor for another year.

The only factor which the manufacturers reject is Structural Chassis Weight.

There is no doubt that tire load capacities are due for some change. But until those changes develop the standard ratings of the Tire & Rim Association apply and manufacturers should have no qualms in furnishing now what they have never refused to furnish in the past. This is wholly aside from the question whether the data should be supplied on the plate.

The factor of Chassis Structural Weight is the only factor about which there is any controversy. Controversy exists not only among truck manufacturers but among the engineers and even among users. The factor, in itself, does not provide the user with essential information. So many pounds of material which he cannot

even visualize is of no value. It is a quantitative item which is useless unless he makes it the basis of an inquiry which thereafter must be pursued along qualitative lines. It is an inquiry which, we daresay, not one-half of 1 per cent of the fleet operators in this country could intelligently pursue. Therefore, because it is controversial and because, in itself, it is worthless, this factor should not be permitted to interfere with the attainment of an accord which would satisfy all but a few.

There is a way in which harmonious adjustment of issues is possible.

The truck industry is faced with two issues: the solution of a political problem, and the furnishing of users with necessary capacity rating information. It is not a matter of choosing between these issues. Both are vital and should be taken care of simultaneously.

The chances of solving the political problem will be greatest if the entire truck industry adopts a uniform capacity rating plate. If each manufacturer were to act according to his own desires or according to the degree of persuasion which individual customers might exert, the plates would certainly contain data that might confuse the political issue and sabotage uniformity.

Therefore, to promote licensing uniformity on a gross vehicle weight basis, the plate recommended by the Motor Truck Committee of the Automobile Manufacturers' Association should be adopted at this time as the standard plate to be affixed to all new trucks placed in service.

At the same time, in order to serve the needs of users, the Motor Truck

Committee of the Automobile Manufacturers' Association should adopt a standard paper form which would provide users with all the capacity data recommended by the Society of Automotive Engineers, with the possible exception of Structural Chassis Weight. This form should be delivered to the user, along with the truck, for his office record.

This two-fold procedure does not represent a compromise of basic principles and users of motor trucks should exert themselves in urging its speedy adoption.

Count This Progress

Speaking at a meeting of the Association of Towns of New York State, Governor Herbert Lehman said: "The railroads do not want any expansion of highway and parkway construction. Highways and parkways are competitors of the railroads and may divert some of their traffic. Opposition by the railroad companies should be properly evaluated by the people."

It follows that the people should also evaluate the railroad attitude toward the users of the highways for what it is—selfish, unscrupulous and public-good-be-damned.

The public will know the truth eventually even by the slow process of extracting it from a truck industry that does not know its strength, that has a staggering inferiority complex and that somehow seems not only unable but unwilling to educate voters.

As despairing truck association men have said for years:

"God will take care of the trucks."

The railroads can't win their iniquitous fight.

start looking to find the "bezel" on your truck?

- a. On the dashboard. c. On the roof.
- b. On the engine. d. Under the floor.

5.

At times, you'd probably called women-drivers every d . . . arned thing under the sun. Properly, though, a woman driver is a . . .

- a. Chauffeuress. c. Chauffeuse.
- b. Chauffee. d. Chautauqua.

6.

See how you rate on this one. Tell us just what the SAE rating on an oil indicates.

- a. The uniformity of the oil.
- b. The viscosity of the oil.

- c. The quality of the oil.
- d. The heat resistancy of the oil.

7.

The oddest history of all automotive names probably belongs to the "poppet valve." Do you know how this valve got its name?

- a. It is so called because it pops up and down like pop corn.
- b. The original name is "puppet valve," so named because its movement resembled that of the puppets in Punch and Judy shows.
- c. This valve is "Pop's Pet." It was Pop Duryea's favorite.

8.

Three elements are required before "sludge" will form in your engine. The

one is oil; the second is finely divided dust; the third is . . .

- a. Air. b. Water. c. Extreme Heat.

9.

If you wanted a wrench to fit into a hex hole, you would ask for . . .

- a. A monkey wrench.
- b. An Allen wrench.
- c. A tap wrench.
- d. A witch's wrench.

10.

If you're in tune with the time . . . and if your radio is in tune . . . you'll not have to guess which of these is now extolling the merits of TEXACO . . .

- a. Dagwood. c. Jack Benny.
- b. Walter Winchell. d. Fred Allen.

A CAPACITY RATING METHOD FOR TRUCKS

SAE committee recommends use of method that indicates rated capacity of a truck in terms of five factors; Makers approve most terms in principle but would concentrate on one



ACTING at the request of the Motor Truck Committee of the Automobile Manufacturers Association, a special committee of the Society of Automotive Engineers has developed a method of indicating the rated capacity of a motor truck that eliminates from further consideration the "nominal tonnage rating" which has been associated with trucks from the industry's beginning. The new method proposes the use of several descriptive factors to indicate rated capacity, chief among which is "gross vehicle weight."

(A method that is a modification of the S.A.E. recommendation has been approved by the Motor Truck Committee of the A.M.A. and is discussed in the latter part of this article.)

The S.A.E. recommendations were developed by the S.A.E. Motor Truck Rating Committee—"a million dollars worth of truck engineering brains," to use the resounding



by **GEORGE T. HOOK**

Editor, Commercial Car Journal

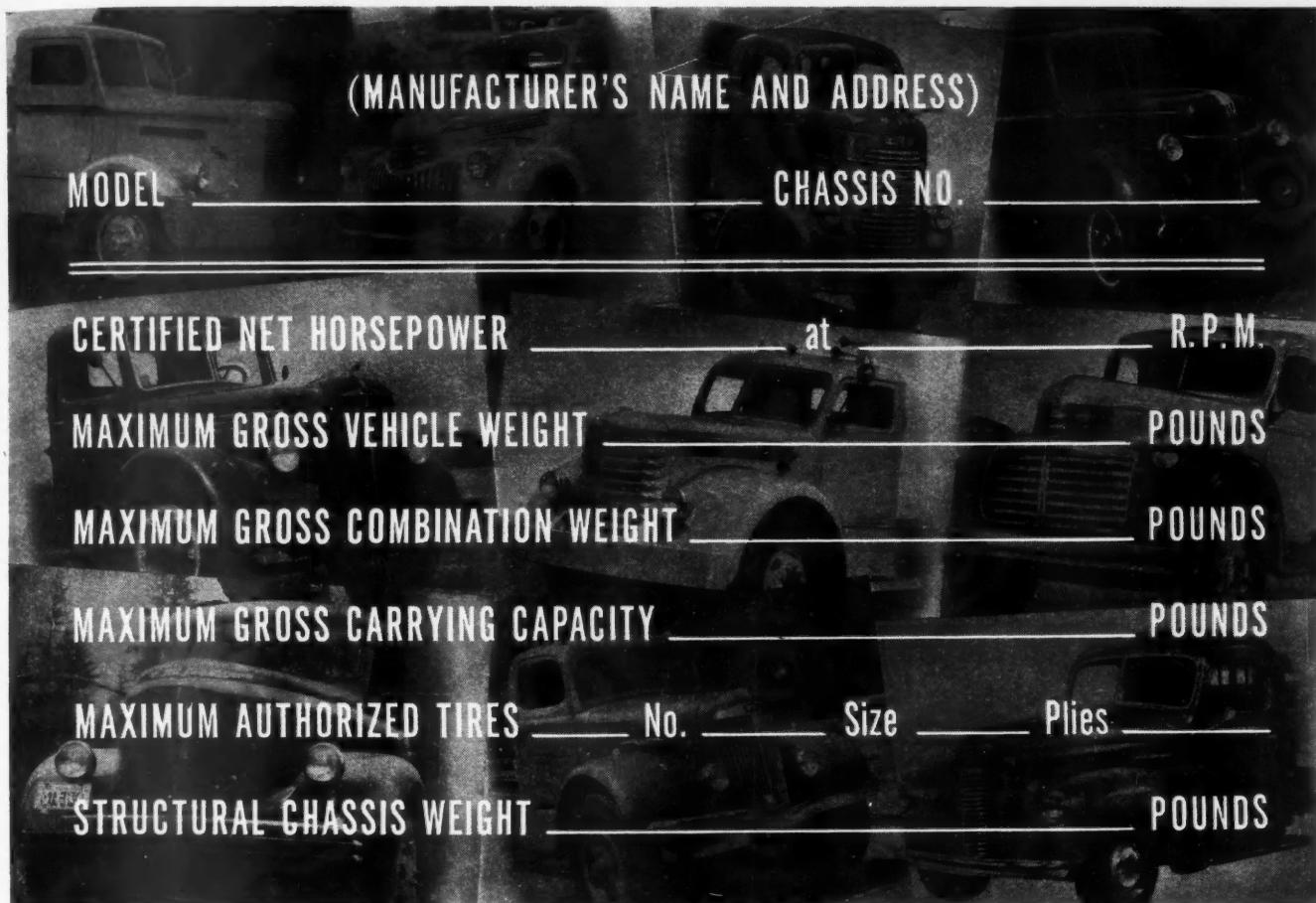
but conservative estimate of its chairman. The committee was made up of nine engineers representing the leading truck manufacturers; two representing leading trailer manufacturers; two representing tire manufacturers; two representing axle manufacturers; six representing large

fleet operations, and one consulting engineer. (The committee roster is given at the end of this article.)

This committee unanimously agreed and recommended that a uniform method of rating the carrying capacity of a motor truck should include the following terms:

1. Maximum Gross Vehicle Weight in pounds;
2. Maximum Gross Combination Weight in pounds;
3. Maximum Gross Carrying Capacity in pounds;
4. Maximum Authorized Tire Equipment, and
5. Structural Chassis Weight in pounds.

This recommended rating method is nothing more than a standard way of stating facts, each manufacturer to determine the facts applying to his product. It is not in any sense an engineering formula for rating trucks. In fact, adoption of this fact-stating method carries with it the admission of the industry's leading



The S.A.E. has recommended the above capacity rating plate (less background) as a model for all truck manufacturers

engineers that, after a decade of off-and-on effort, the industry's quest for an engineering formula that would serve as a check on manufacturers' claims is at an end. The committee states the matter this way:

"The carrying capacity of a motor truck is the end product of the almost innumerable elements of its design and construction. It is the integration of the carrying capacities of the tires, wheels, bearings, axles, springs, steering system, brakes, frame, engine, etc., and the many parts of these major components. Ideally it would be desirable to rate carrying capacity by means of an engineering criterion, or formula, which would integrate this multitude of complex elements and give an answer entirely objective in character. Unfortunately no such criterion is available and, if an acceptable one could be developed, it would be exceedingly complicated. It consequently would not have the requisite characteristics of simplicity and un-

derstandability, and thus would be without practical usefulness."

At the outset the committee undertook to explore the possibility of developing an engineering formula that would enable competitive trucks to be compared so that their relative ability to do what the makers claimed could be evaluated. The difficulties cited above could not be surmounted and the committee decided "that the most satisfactory alternative is for the manufacturer to rate the carrying capacity of his own products and that, for the worth-while benefits to be derived from uniformity, the form of rating should follow a standardized pattern. This would require each manufacturer to provide the same information about the carrying capacity of his trucks." The committee, however, made it clear that this information would not necessarily be entirely comparable "because of the variations in the bases on which different manufacturers rate their products as determined by

their own design and selling policies."

Definitions of the five factors included in the capacity rating method and reasons that prompted their adoption are as follows:

1. Maximum Gross Vehicle Weight is the weight in pounds of a truck chassis with lubricants, water and full tank or tanks of fuel, plus the **Maximum Gross Carrying Capacity as defined below.**

(This figure is of primary importance as a basis for licensing since it is an index of highway use. Gross vehicle weight also is necessary for the determination of potential ability and determining tire equipment. Ability factor in pounds per horsepower is obtained by dividing the Maximum Gross Vehicle Weight by the Certified Net Horsepower. By subtracting Maximum Gross Carrying Capacity, chassis road weight is obtained.)

(TURN TO PAGE 65, PLEASE)

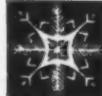
PURITY

PERFECTS A PATTERN

Rebuilt units in stockroom and life records in office make food fleet's maintenance a mechanical routine



by **PETER GLADE**, Superintendent of Equipment, Purity Stores, Ltd., San Francisco, California



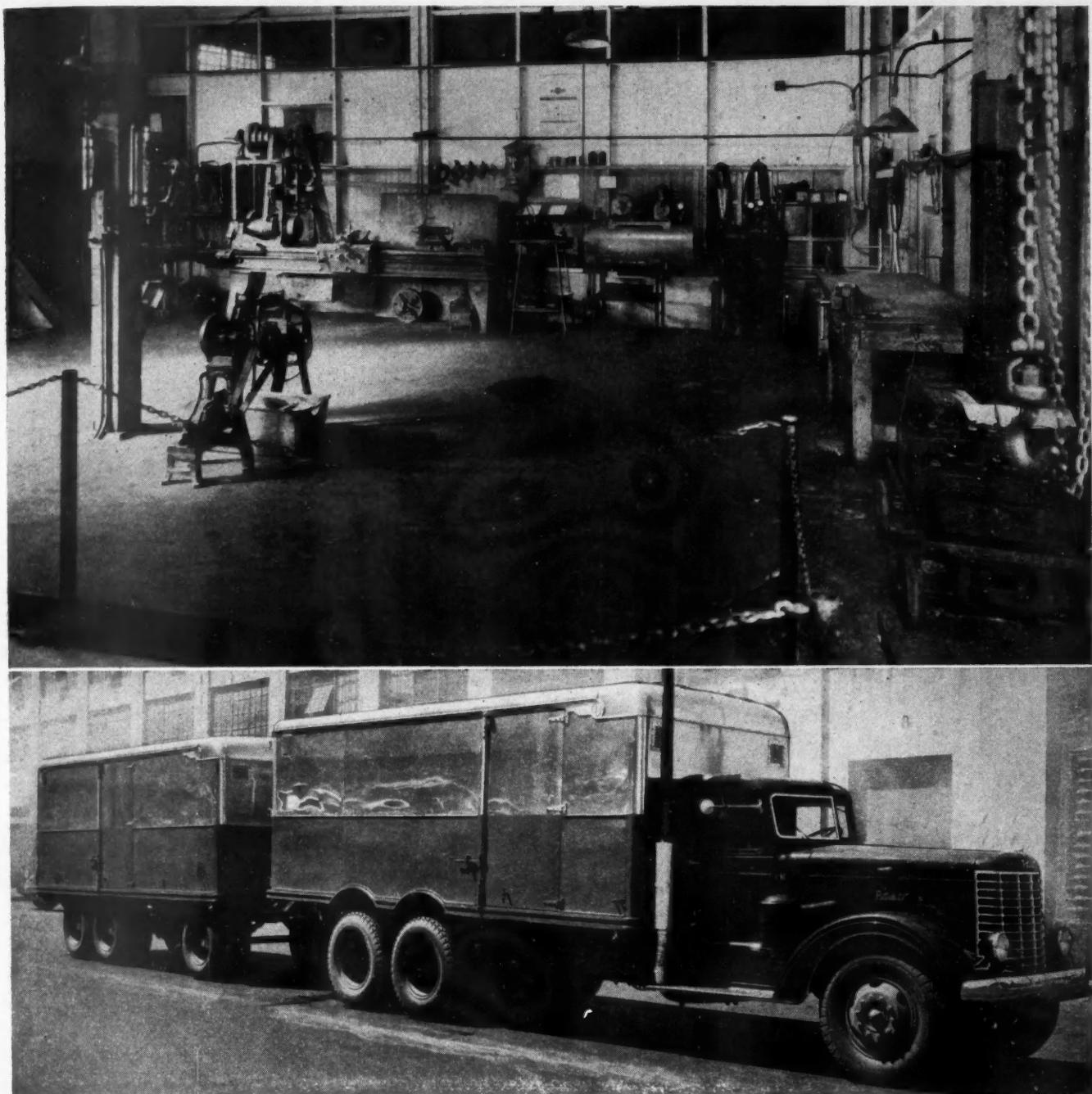
TRUCK Maintenance problems differ in many respects from one another, even though the same type of equipment is used over the same highways. This is due to the nature of the particular business of operators and the maintenance system. This article covers only one firm's operations.

In the maintenance of a fleet of heavy duty vehicles used in highway transportation the first problem is to

set up standard maintenance operations and periods at which they are to be performed. They should be set up conservatively and changed as experience warrants.

We take into consideration first the total mileage the vehicle operates per month, its type and age and how long since a major overhaul, the part of the state in which it operates, that is, the valley or over mountainous roads, and how frequently this unit comes into the main warehouse.

Our firm operates a warehouse in Sacramento and all equipment touches that point at least once a week before returning to San Francisco. Relief drivers located at various points make it possible to run up mileage per vehicle as high as 1900 miles per week, and some equipment is in the main warehouse only once a week. Minor adjustments and repair work, as well as checking transmissions, differentials and brake adjustments, are done by truck garages at Sacramento,



Top: A section of the Purity shop. Above: A tandem-drive six-wheeler and three-axle trailer—typical of Purity equipment

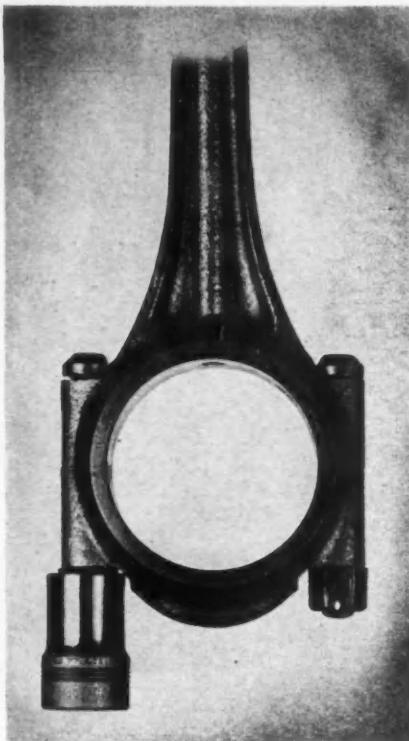
Fresno and San Luis Obispo, who have a fair understanding of this type of work. The drivers are allowed to use their own discretion relative to necessary work to be done in an amount up to five dollars, otherwise they have to call in for further consultation and permission.

Upon the driver's termination of a trip at the main warehouse he makes out a "Driver's Trip Report," from which an analysis is made by the shop of work to be done, as well as inspec-

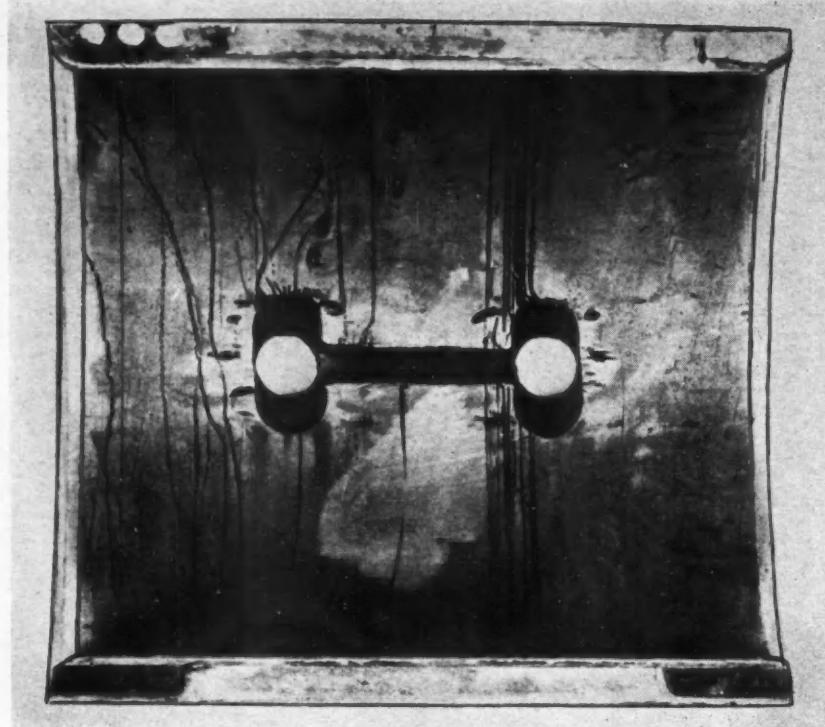
tion of steering mechanism, brakes, motors, tires, etc. Any work considered of such nature that it can be held over is transferred to a "Work Sheet," to be finished at a later date. If this unit is up for a lubrication job it is done here, and all transmissions, differentials, batteries, tires and fuel pump screens are serviced. Generators and regulators are checked regularly for brushes and condition of both units. Balancing of these two is done twice a month and set at 14.6

volts. We carry exchange units of all electrical equipment, fuel pumps, injectors, air compressors, cylinder heads, radiators, brake shoes, brake drums, brake valves, both for truck and trailers, in our stock. We find this protects us in facilitating speedier maintenance service, considering the fact that most of our service work is done in the warehouse runways at loading time.

We use two transmissions in all
(TURN TO PAGE 106, PLEASE)



Thick-walled sockets used for tightening nuts may exert pressure against bearing caps and cause distortion



This bronze-back babbitt-lined bearing has been scored, lined and marked by large foreign particles introduced into the bearing by the oil stream. Well maintained oil filters and air cleaners will prevent this type of damage

ENGINE BEARINGS



Engine bearings have undergone radical change in recent years and the transformation has been puzzling to mechanics principally because they have not had access to any explanation in terms that they could understand. Of explanations there have been plenty but they were part of discussions among bearing specialists who have reached a point where they talk a language all their own and it is pretty hard for the maintenance man to follow.

Practically every mechanic is familiar with the old type of engine bearing that was loosely but satisfactorily described as babbitt and many of them wonder what has happened to make them disappear from the American automotive scene. These bearings were either a bronze shell having a babbitt lining somewhere

between $1/16$ in. and $1/8$ in. thickness or a similar amount of babbitt spun or poured into a connecting rod forging. They were fitted with shims and bearing work was considered the peak of the mechanic's art.

As engine designers began the process of getting more power from smaller engines the bearing loads increased from 800 lb. per sq. in. to as high as 2500 lb. per sq. in. The speeds at which the crankshaft operates went up about 1500 r.p.m. The old type bearings just simply would not meet these demands satisfactorily. The result was the precision insert type bearings composed of several different metals with much thinner lining.

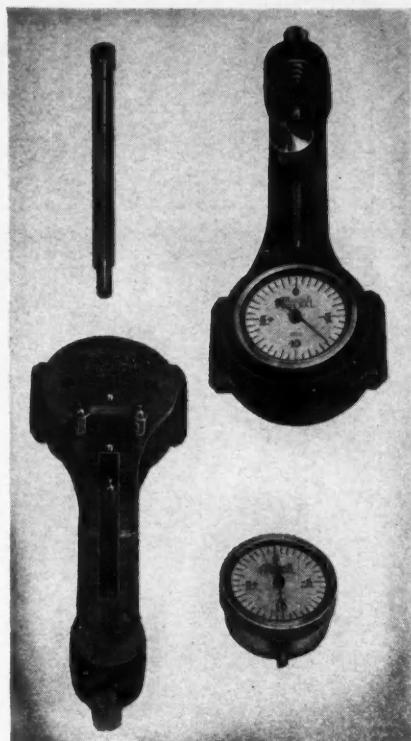
At present there are four basic types of bearing metals commonly used. They are tin base babbitt, high lead babbitt, cadmium silver and copper lead. Actually the tin base

babbitt type can be subdivided into two classifications. One can best be described as a competitive bearing from a price standpoint. It is the best bearing that can be provided at a price and is completely satisfactory in many installations. Its counterpart in the babbitt category is a bearing made of the same metal but manufactured without regard to cost. If this difference can be considered wide enough, then there are two types of tin base babbitt bearings and therefore five types of bearing metals in common use.

This variety of bearing metals came into being and use because different men worked at the problem of improving bearings to keep up with engine design. Now different men have different ideas and wind up with different ways of doing the job. In this case the different developments

Engine bearings have changed. They do not even look like the bearings of a few years ago. This article not only tells why and how they have changed but also outlines why the new designs are better and what the fleet operator must do in the way of maintenance to take full advantage of the improvement

by **HENRY JENNINGS**
Technical Editor, Commercial Car Journal



Federal - Mogul tool for determining connecting rod roundness. The rod should be checked in six positions

LAID BARE



have quite different characteristics which make them ideal for different installations. So far there is no universal bearing material—that is one material that is best for all engines.

Practically all engine bearings today are of the removable type and consist of about .0025 in. to .030 in. of bearing material applied to a bronze or steel back. Actually the greatest number of bearings as now used have a lining thickness in a range of .020 to .030. The really thin

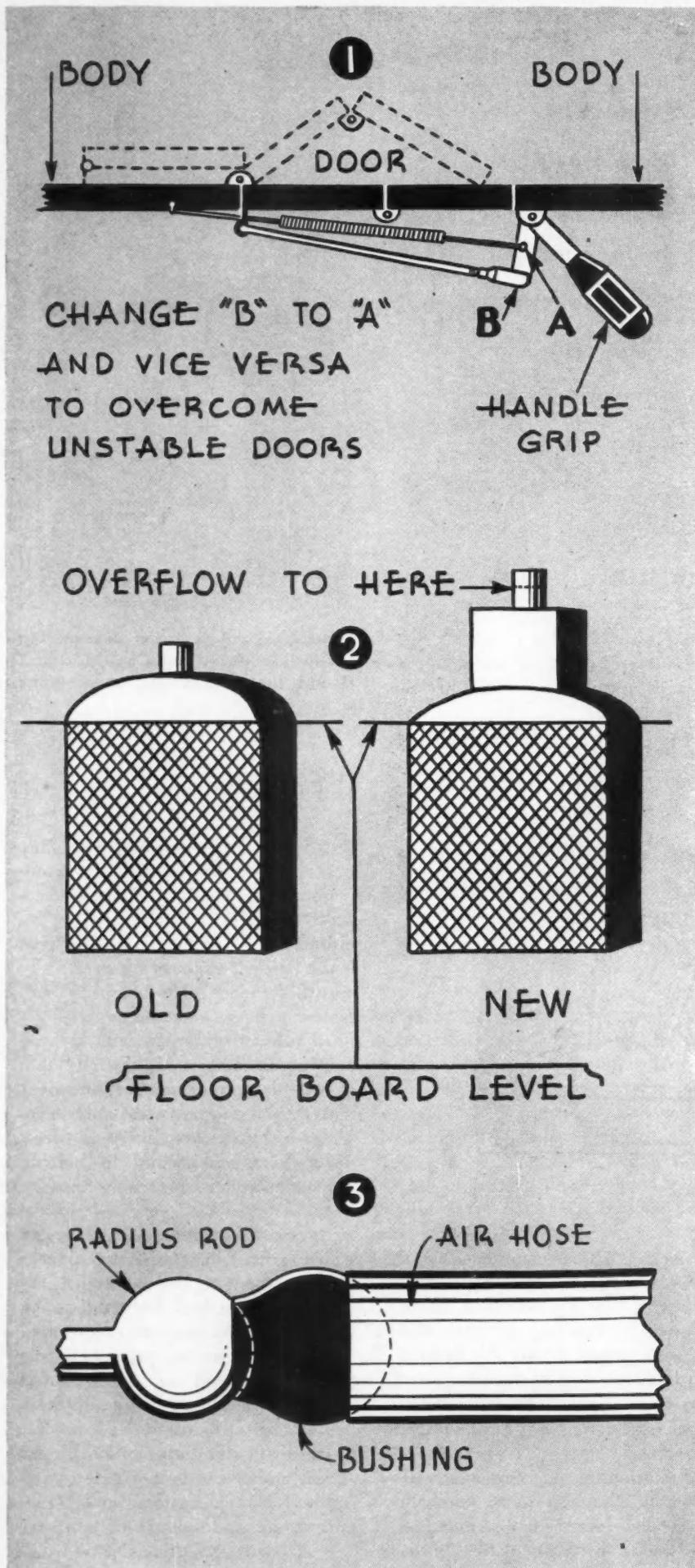
bearing (.0025) is so new that it might be said to be an experiment being tried out in production. They are precision bearings—that is, they fit when installed. There is no adjustment, the bearings being discarded when worn beyond allowable limits, and of course they are not equipped with shims.

In developing the new materials for engine bearings it is axiomatic that the developers learned about all there was to know about the charac-

teristics of the materials before they ever released the material for commercial use. A study of these characteristics and an analysis of the requirements of any given engine have made bearing engineering practically an exact science. The bearing manufacturers have some pretty well defined rules to guide them in making bearing installations although there is still plenty of room for judgment and the engineers with knowledge and experience are likely to draw upon their background in making recommendations for some time to come.

As an illustration of the rules which guide the bearing engineer there is the one that says that the competitive tin base babbitt bearing should not be subjected to more than 1000 lb. per sq. in. pressure, while the quality built tin base babbitt bearing is satisfactory up to 1500 lb. per sq. in. The high lead babbitt bearing will stand up to 1800 lb. per sq. in. and the cadmium silver bearing is recommended for over 1800 lb. per sq. in. and up to 3850 lb. per

(TURN TO PAGE 72, PLEASE)



CAN

1. Door Linkage

By Don C. Laurian
Michigan Bakeries, Inc., Kalamazoo

We had some trouble with the doors of our multi-stop trucks flying open when the trucks were driven at high speed or were accelerated fast. To correct this trouble we removed the spring retraction from the operating bell crank and also removed the operating link. Then we enlarged the hole in which the spring is hooked and fitted the connecting link and pin in that hole. Now hook the spring into the original operating link pin hole. This re-arrangement has solved our troubles.

2. Radiator Tank

By Reinhold Shuette
Sheboygan, Wis.

We have improved the operation of our heaters by simply soldering a copper sheet box on top of the radiator top tank of our c.o.e. trucks. The height of the additional tank is governed by the amount of space available. We simply removed the filler neck, soldered the additional tank in place and placed the filler neck on top of it. Of course, it is necessary to extend the overflow pipe to a normal position with relation to the filler neck.

3. Fitting a Rubber Bushing

By William C. Acker
San Francisco, Cal.

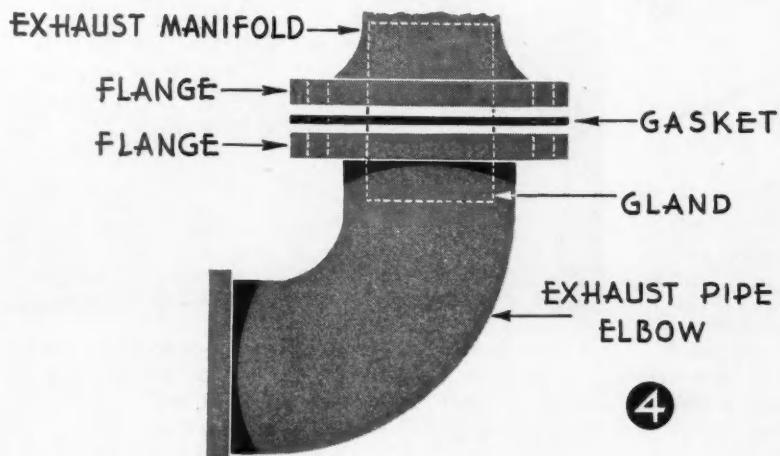
Ordinarily it is no easy job to force rubber bushings on Ford radius rod balls or any other parts where such hollow rubber ball bearings are used. My way is to wet the rubber ball with water then apply it to the ball joint and place the nozzle of the air hose



Commercial Car Journal pays \$5 for each shop hint accepted for publication on these pages. Simply send in the idea which you believe to be original. Don't worry about style. Acceptance is based on the idea. CCJ will edit it for publication

SHOP HINTS

FROM FLEET SHOPS



over the small hole in the bushing. When the air is turned on it will expand the bushing and the pressure required to hold the air nozzle in contact with the rubber ball forces the rubber bushing over the ball.

4. Exhaust Sleeve

By J. M. Kavanagh
Jackson Heights, N. Y.

There are some trucks that are chronically troubled with blowing the exhaust gasket at the exhaust manifold to exhaust pipe joint. We cured this trouble by making a gland to fit its joint. It is made by cutting a length of tubing that fits the inside diameter of the pipe and manifold so that it extends about 1 in. up into the manifold and 1½ in. into the exhaust pipe. We have been universally successful with this cure. The gland is made of old exhaust pipe.

5. Oil System Tester

By Wm. M. Kendrick
Acme Laundry Co., Chatham, Mass.

The oil pressure test has long been suggested as a means of checking engine bearings. We use the test without any special equipment. Our service truck like almost all other trucks has a 1/8 in. pipe plug in the main oil channel so we remove this as well as the one from the engine we are working on and connect the two by means of extra heavy windshield wiper tubing equipped with solderless connectors and a short piece of copper tubing at each end. To test the bearings it is only necessary to start the engine of the service truck and observe the drip from the bearings of the engine in question.



ANY fleet shop equipped for oxy-acetylene welding can repair bumpers using the method described pictorially on these pages. Repaired this way the weld is at least as strong and shock resistant as the rest of the bumper. The process is simple and inexpensive.

Briefly the new repair consists of nothing more complicated than making a butt-type bronze weld at the fracture across the back of the bumper. For added strength the joint is reinforced by three short lengths of steel welding rod embedded in the bronze.

The average time required for making a complete repair including preparation, bronze welding and finishing amounts to between 15 and 25 minutes depending upon the skill of the operator. Of this total 10 to 15 minutes are required for tack welding and joining the two parts of the bumper, using the blowpipe and tip nearest to No. 56 drill size. The balance of the time is used by preparatory grinding and final buffering of the front of the bumper to remove discoloration from the chromium plating.

The low temperature involved in bronze welding leaves the temper of the spring steel unaffected. Further the bronze weld metal itself is more ductile than the steel so that its addition during the repair actually gives increased ductility to the bumper.

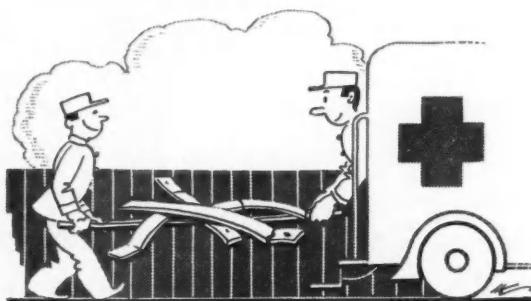
The old type of fusion weld will not satisfactorily resist impact unless bumper is heat-treated after welding.

SALVAGING

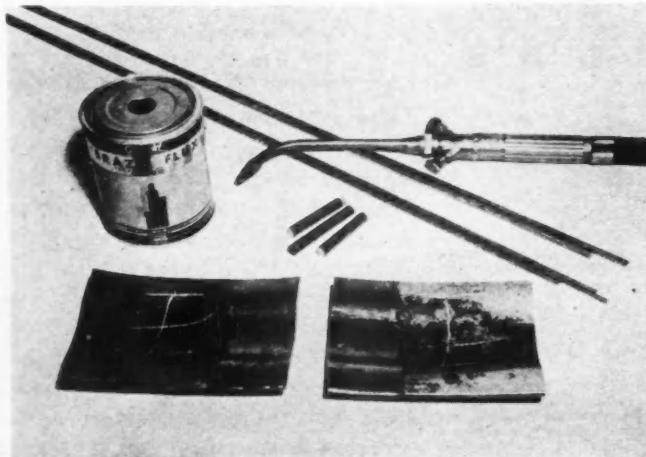
SPRING STEEL

BUMPERS

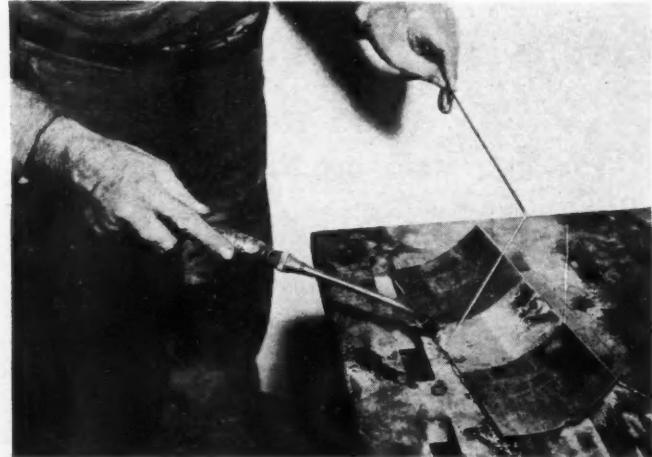
Bronze welding reinforced by steel welding rod makes an economical repair as strong as the bumper itself



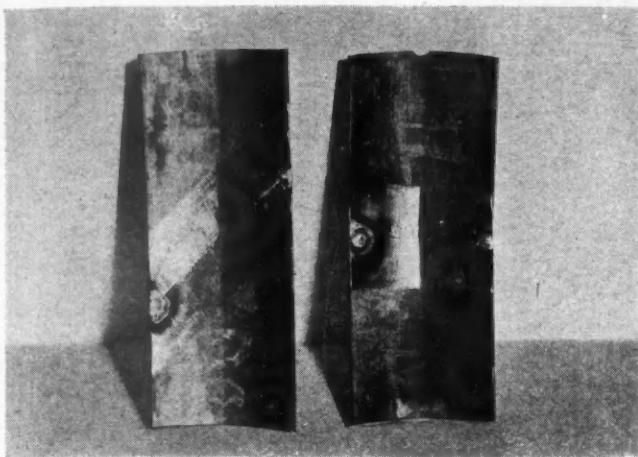
Photos and data courtesy of The Linde Air Products Co.



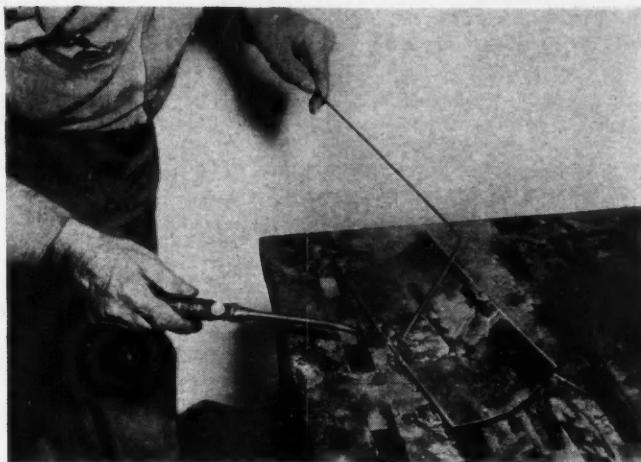
1. Materials required include $\frac{1}{8}$ -in. and $\frac{3}{16}$ -in. No. 25 M. bronze rod, brazing flux, one $2\frac{1}{2}$ -in. and two 2-in. lengths of $\frac{5}{16}$ -in. No. 1 High Test steel welding rod and a blowpipe with a tip nearest to No. 56 drill size.



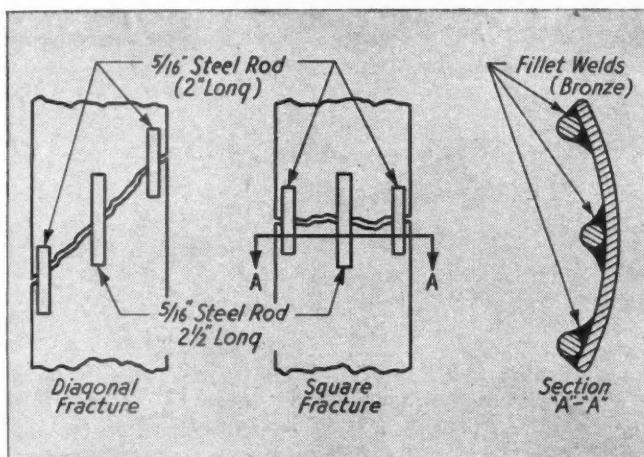
2. Grind the back of the bumper to remove the chromium plating over a width of about $1\frac{1}{2}$ in. on each side of the break. Then line up and tack-weld the parts. Fractured surfaces may be wire-brushed if they are dirty or rusted.



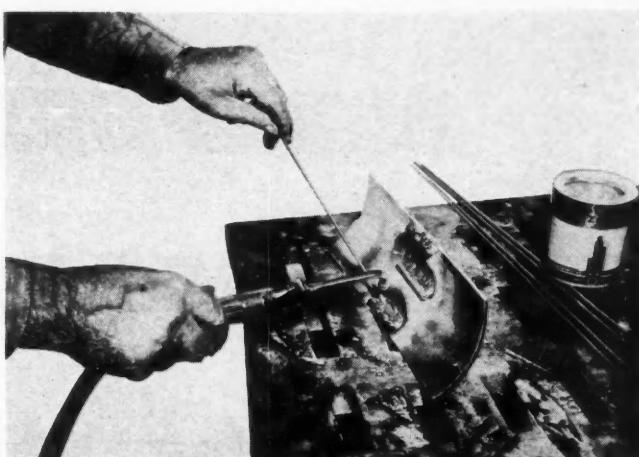
3. Because the metal is thin, the fracture need not be vee'd. Make the bronze tack-welds at both ends of the joint, which may be either diagonal (left) or square (right). The diagonal-type joint is the stronger of the two.



4. Join the end of a $\frac{1}{8}$ -in. bronze rod to one of the "splints" to facilitate positioning and tack-weld the steel rod section across the fracture on the back of the bumper. Then repeat with the other two reinforcing members.



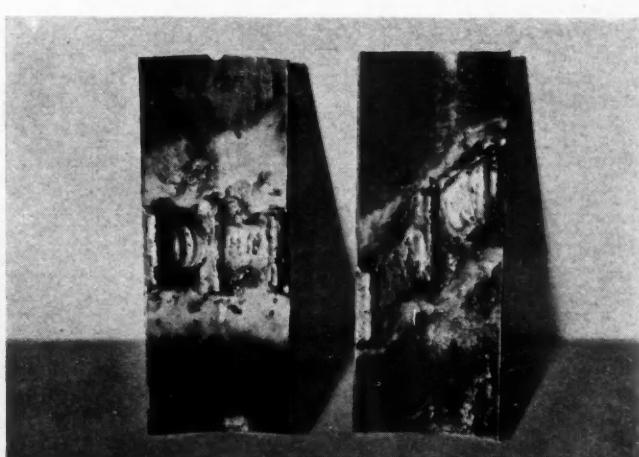
5. Locate the $2\frac{1}{2}$ -in. reinforcement across the center of the break and the 2-in. sections close to the edges of the bumper. Round "splints" speed the next step, facilitating penetration of the bronze beneath the reinforcements.



6. Join each "splint" to the bumper with two 45-deg. bronze fillet welds, one on each side. Work the bronze well under the splint as shown in Fig. 5, building up each fillet weld in two passes with the $\frac{1}{8}$ -in. rod.



7. Make a butt-type bronze weld, using a $3/16$ -in. rod. Be sure the weld metal penetrates into the fracture and fills the areas between "splints." Build up this weld until it measures about $3/16$ in. thick and 1 in. wide.



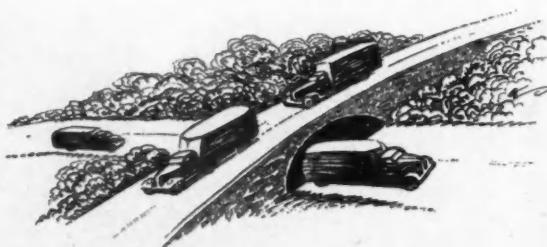
8. Clean the bronze weld in the usual manner. Then buff the front of the joint to remove discoloration. Both square (left) and diagonal-type joints (right) have a greater resistance to impact than the original bumper.



Artist's conception of 12-lane limited-access express highway in thickly-populated section. The surface is slightly higher than bordering roads.

A REPORT ON ROADS

**Boston to Washington link takes
No. 1 spot in road builders' dream
of nation-wide super-highway net**



THREE is nothing more vitally interesting to fleet operators than "roads." So, as an unofficial observer for the fleet field, an editorial representative of COMMERCIAL CAR JOURNAL attended the thirty-eighth annual convention of the American Road Builders' Asso-

ciation in New York City late in January, to find out what commercial users of the highways may look for in the way of roads in the coming years.

If the builders of roads have their way

1. An express super-highway from

Boston to Washington, D. C., is a certainty.

2. Other populous areas will be linked by express highways.

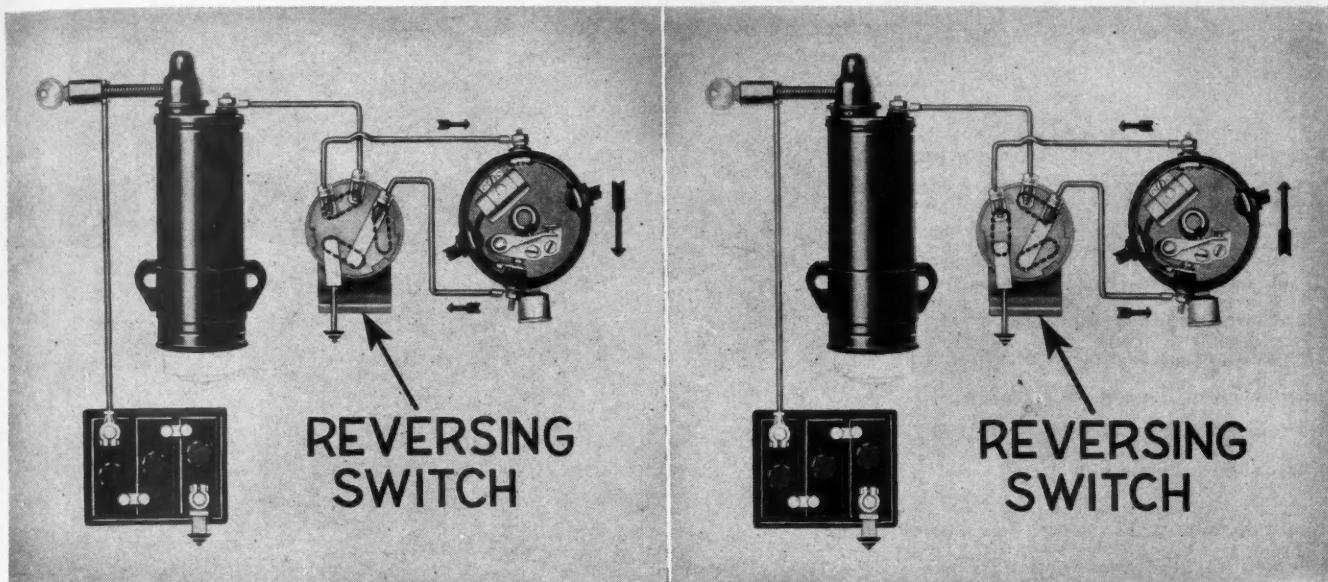
3. 75,000 miles of strategic highways will be improved to meet military and civilian requirements under the defense program.

4. Trunk-line highways leading to and through large centers of population will be improved with states sharing in the cost.

This is an ambitious design for the future and represents more an appetite than an official plan or program. It was developed in the course of a convention whose theme note was "Roads for Defense." But at the very outset the note was flattened by Mayor Fiorello LaGuardia in his welcoming address.

"Don't pin road building on national defense," the Little Flower urged in tone that bordered on coaxing. "We have built roads; we are building roads, and we will build roads in the future. We will need better roads and bridges even though we remain at peace. I hope the next time we meet we will have progress to report in the construction of much-needed highways throughout the country."

(TURN TO PAGE 92, PLEASE)



Schematic diagrams show how the reversing switch, introduced on 1941 Chevrolet, shifts the current flow. Circle below shows switch mounting.

REVERSING

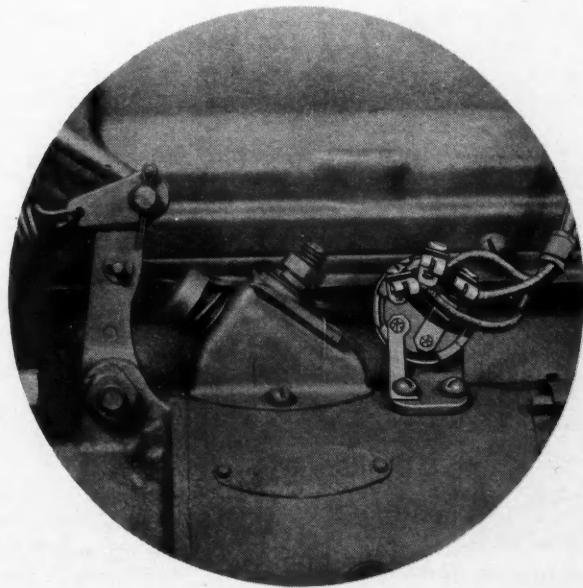
SWITCH

Design, operation and service notes on a new unit that lengthens point life by changing current polarity

PROBABLY the distributor contact points get more attention than any other part of the ignition system and this seems reasonable because they see plenty of action, operating 12,000 times every mile on an eight-cylinder vehicle. At 60 miles an hour, they are opening and closing 200 times every second. If the points are not making good contact every time they close, if they are closing early or late, or are remaining closed too briefly, the ignition system is not functioning properly, the energy of the spark will be cut down, timing will not be right, and the engine will not have the pep and power it should have.

Point pitting, or the transfer of point material from one point to the other, is one condition which sometimes takes place in the ignition system and is produced by a lack of balance in the transfer of contact material between the points. Whenever any contact points interrupt a flow of current and an arc occurs, there is always the tendency for material transfer to take place, because the arc causes ionized particles of the contact material to detach from the point surfaces. These ionized particles move toward one point or the

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EDITOR'S NOTE

Commercial Car Journal digresses from its recent series of bodies designed and in some cases built by fleet shops to present a preview of the spectacular Futur-liner recently completed by General Motors for use in its 1941 Parade of Progress tour.

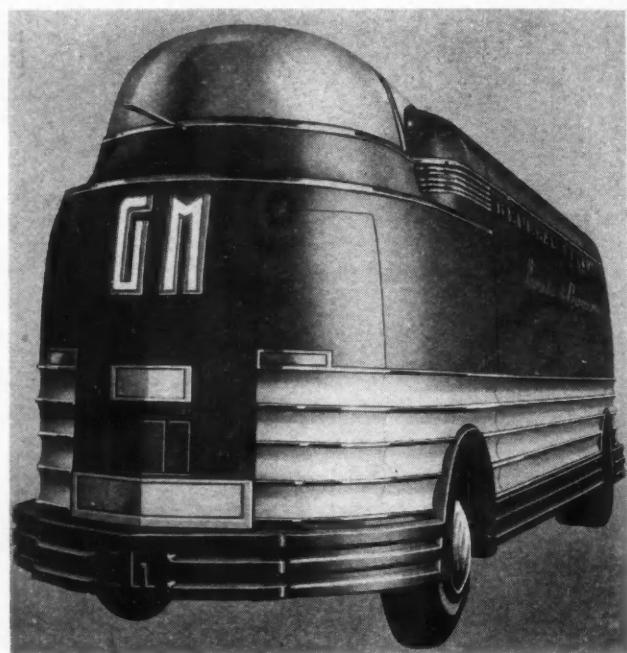
Space in subsequent issues has been reserved for the presentation of unusual body designs—a feature to which all Commercial Car Journal's fleet readers are invited to contribute.

GENERAL MOTORS has produced a completely new ultra modern caravan to replace the original Parade of Progress exposition. It will comprise 22 specially designed and constructed automotive units. Twelve of them have been named FUTUR-LINERS, because of their advanced design. The Futur-liners house the exhibits; the other units—trucks and tractors with semi-trailers—carry miscellaneous exposition properties.

This new caravan is scheduled to take the road soon in a country-wide tour beginning in cities of the South. The exposition, which will include highlights of both the New York and San Francisco World's Fairs, will show, by many dramatic exhibits and demonstrations, how research aids national defense and vitalizes industry to take up the slack of men, money and materials. There will be no charge to the public for admission to showings.

The Technical Exhibits and Styling sections of the corporation have designed in the Futur-liners many unusual, if not unique, features for this

THE BODY OF



Above: Front and side views of the Futur-Liner give evidence of the degree to which streamlining has been carried. Access to interior is through front doors. The 16-ft. side doors are power-operated; open both up and down

"world's fair on wheels." Radical in streamlining, each Futur-liner, from the front end resembles a Flying Fortress. And the cab interior is finished like the pilot's compartment of a swank private airliner. Construction was done in the Fleetwood plant of the Fisher Body Corp. in Detroit.

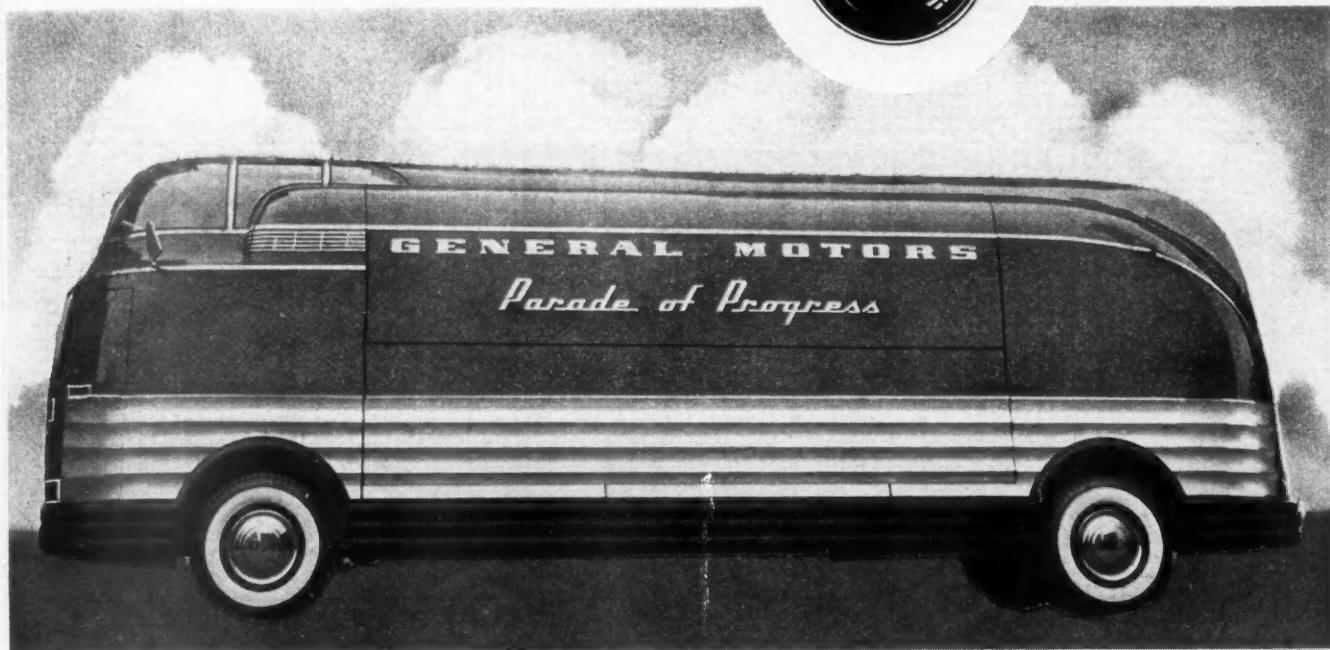
Each Futur-liner is 33 ft. long, 8 ft. wide, 11 ft. 4 in. high. The wheelbase is 248 in. The front body-overhang is 74 in., the rear, 76 in.

One of the unusual features of the Futur-liners is the use of dual front wheels which greatly increases the load handling ability, road ability and safety of these large highway transports. The wheels are Differential

Dual wheels which rotate independently of each other. Each wheel is equipped with its own brake which is synchronized with the brake of the mating wheel. As a result of the dual front wheels the units have been designed to carry just about one-half of the gross weight on the front axle. The units will weight from 6 to 10 tons with full equipment. The white-black sidewalled tires are the same size, 10.00 x 20, front and rear.

The lower body of each Futur-liner is protected by heavy front-and-rear rubber bumpers backed by steel plate. The rear bumper breaks in the center and drops to form steps to the rear door of the unit. On both sides of

THE MONTH

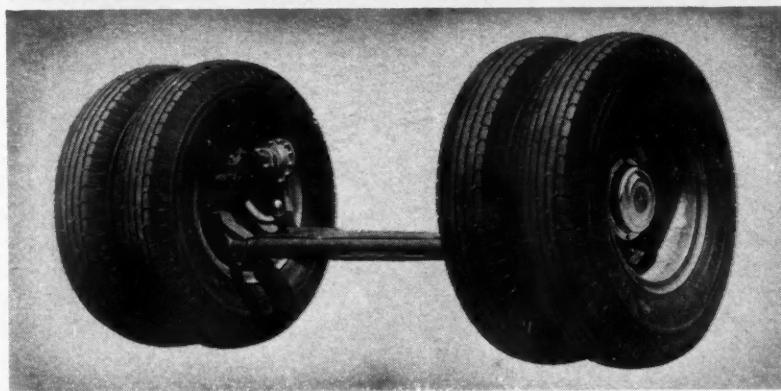
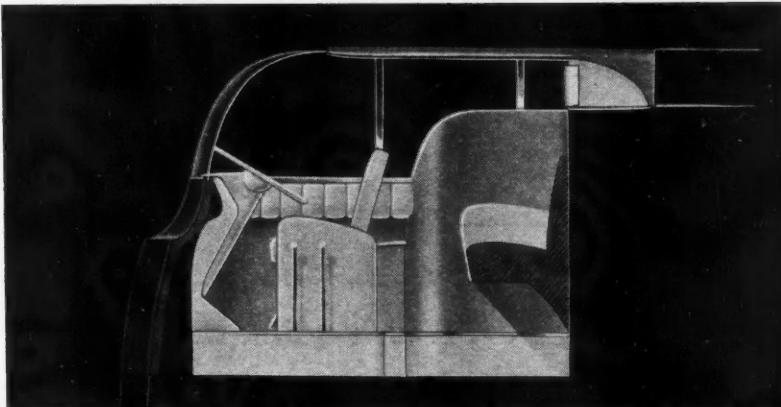


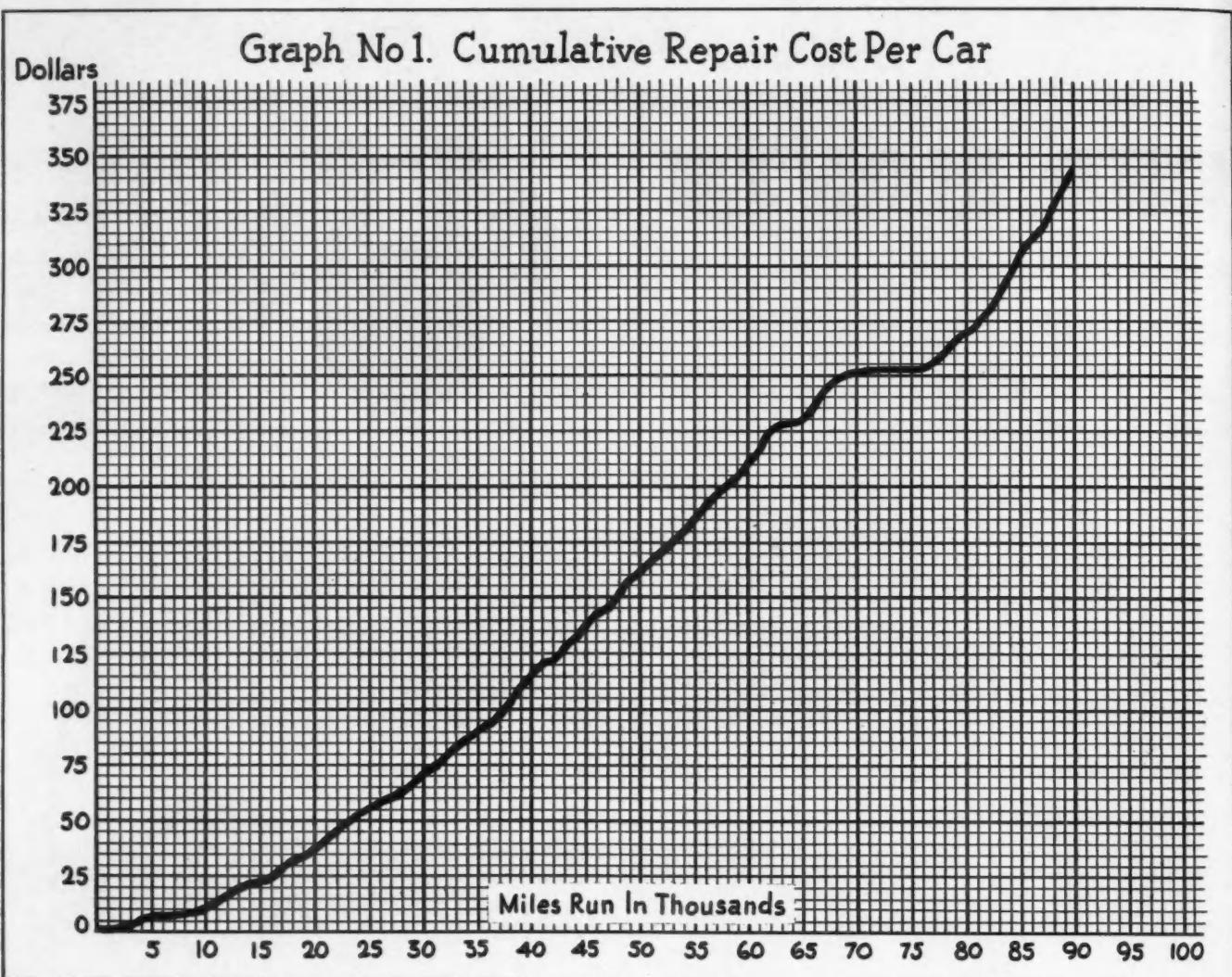
Right: With eyes 10-ft. above ground level, "pilot" sits in middle of the spacious driving compartment. Differential dual front wheels are a feature

each Futur-liner there are three rubber extrusions, or rub-rails, each 1 in. thick and 3½ in. wide, bolted to the body, with 1 in. of body showing between each extrusion. These rubber strips continue the bumper design around the entire body. Conventional circular rubber flaps trim each wheel-housing.

The steering wheel is mounted atop a steering column streamlined like an airplane strut in the center of the driver's compartment, rather than to the conventional left. Behind the wheel the driver sits upon a single seat, midway between the front wheels, his eyes 10 ft. above the

(CONTINUED ON PAGE 54)





This chart shows the repair cost only of the average passenger car in a 277-car fleet. The article outlines a simple method of determining the advisability of making repairs at any stage of the car's life by plotting cost and mileage

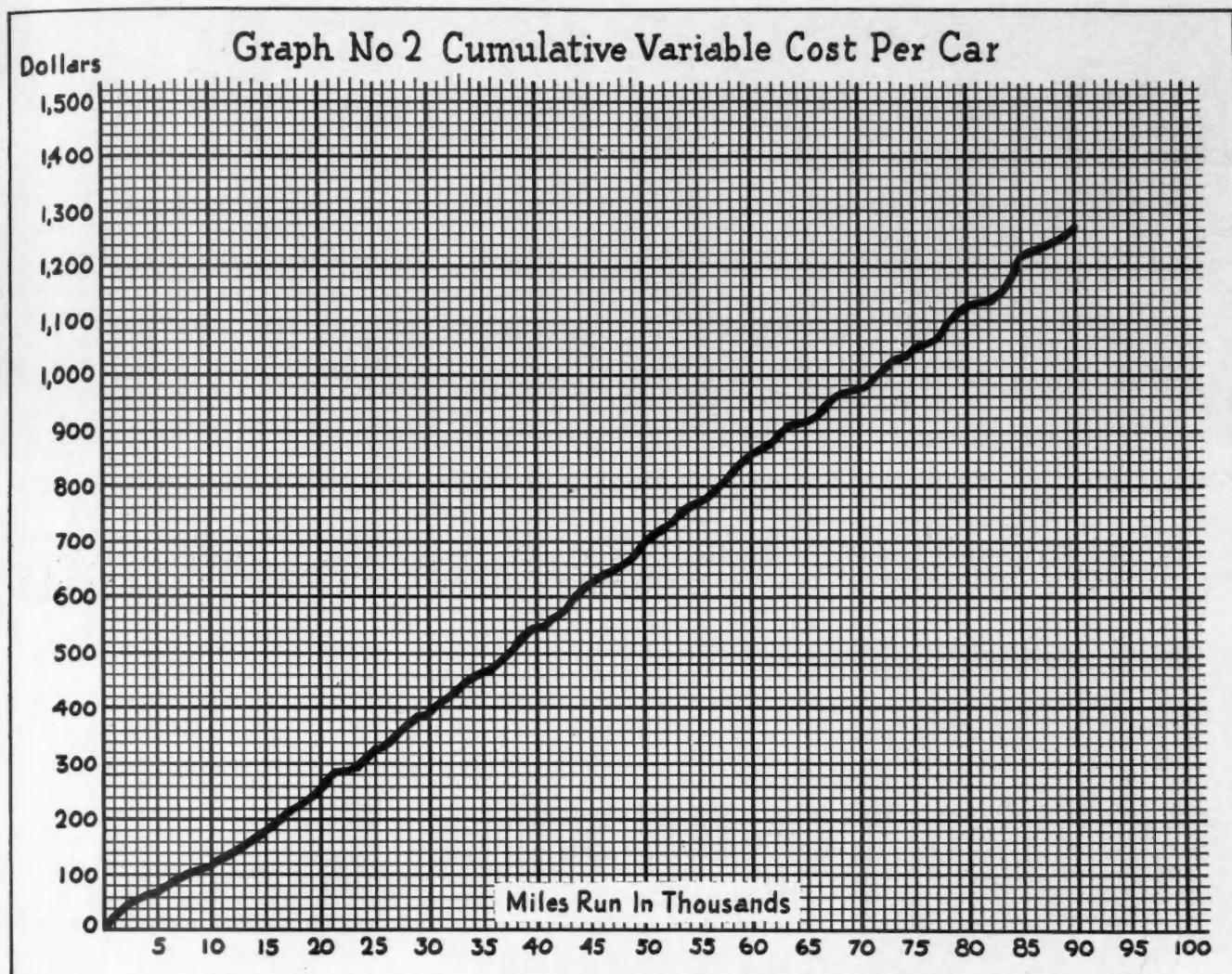
Accumulating cost experience over three-year period, one large fleet operator evolves a quick method to tell when replacement is warranted



A WAY TO



BUYING new vehicles may be a thrill but it can easily be a costly one if the buying is not done at the right time. How to determine the right time is a problem upon the solution of which no two fleet operators seem to agree. Many fleet operators have some method of arriving at a purchase time that appeals to them but more fleet operators seem to sense that new vehicles are needed in the fleet only when they experience growing pains in the budget.



This chart shows the variable cost (less depreciation) of the average passenger car in the same fleet. It can be used very easily, as shown in the article, to determine at what point a car should be replaced to effect maximum economy

WEIGH REPLACEMENTS

A large eastern fleet operator who has vehicles scattered all over the eastern seaboard has figured out a method that helps him decide when to buy new passenger cars. He has developed experience curves that are based on experience with 277 passenger cars over a three-year period. His records are accurate and his maintenance is good. Ford, Chevrolet and Plymouth passenger cars of popular fleet models make up the fleet. The fleet operator (because of his company policy we must omit his

name) emphasizes that his method should not be made as an inflexible rule for buying new cars. He does believe that it gives him a quick picture of the car, its condition and its record to help him make a decision. As such we present it to other fleetmen.

The method of determining whether or not to replace a car is based on the use of two graphs. The curves drawn on these graphs are plotted by experience. The method of developing the curves is simple. The first

curve (Fig. 1) shows the cumulative repair cost on the average fleet car. To plot the curve, the total repair cost of each car in the fleet was taken at each thousand miles and added together for a fleet total for each 1000 miles. The total was then divided by the number of cars, thus giving the average fleet car repair cost at each 1000-mile interval.

The curve on the second graph (Fig. 2) was plotted in the same manner except that the fleet operator took

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Changing even a 10-in. tire is a one-man job in the Boyertown fleet. The photos above show why. 1. Spare removed to show detail of plank mounting. In traveling position it is

reversed and forward end carried on frame cross member. 2. Plank in place, stud nuts removed preparatory to demounting. 3. Mr. Moyer uses plank as lever to lift wheel off studs.

4. Next he lowers plank, pivots tire and . . . 5. He rolls it to the ground. Going up, the process is reversed again using the plank as a lever (6) to lift wheel back onto the studs.

DOWN-TO-EARTH MAINTENANCE

Shop-made items and service kinks help keep long-lived casket company trucks at maximum efficiency

by BART RAWSON



THE fact that its loads are relatively light but definitely bulky is the first and most important premise upon which trucks for the Boyertown Burial Casket Co. are purchased. Weather protection is not a factor because each finished casket is packed in its own weather-tight shipping case, and since most of the trucks are used for the simple purpose of shuttling the finished product between the factory in Boyertown, Pa., and certain eastern branches, style is also of little importance.

The result is a fleet of highly specialized trucks, definitely unusual in proportions and appearance, but designed to fulfill these requirements to the letter. Since they are so specialized, replacements are made only when a truck no longer pays its way, as shown by the company's carefully compiled operating records. Thirteen years is not exceptional in Boyertown's over-the-road service, and the 500,000-mile mark has been passed more than once. So down-to-earth maintenance—the job of keeping these trucks on the road and performing economically—is the company's number one fleet job.

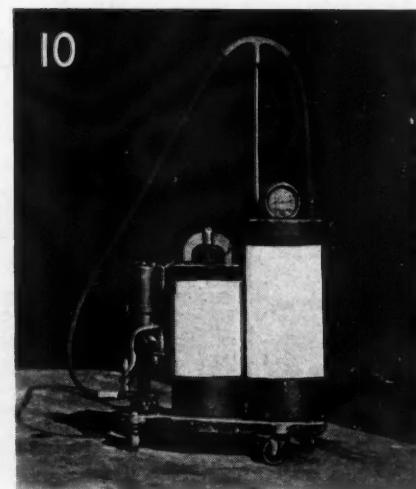
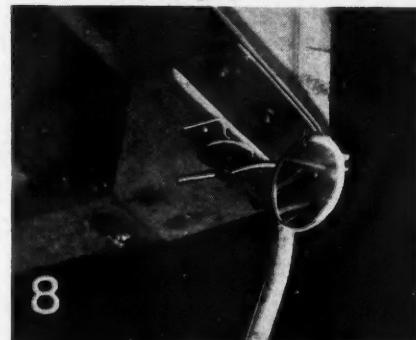
But first a word about the overall picture. Boyertown is the second



7. To make sure batteries are fully accessible, most Boyertown trucks have running board boxes like this. Note the hood clamp, pins instead of hinge (so that top comes off), studs

with lock nuts to hold battery in place, and heater-hose covering to protect cables from external injury. 8. The optically efficient mirror mounting (on forward end of body) is

vulnerable, so Mr. Moyer made up a special mounting that permits mirror to swing inward (9) if hit. 10. The lubricator carries its own air tank, and thus needs no external connection.



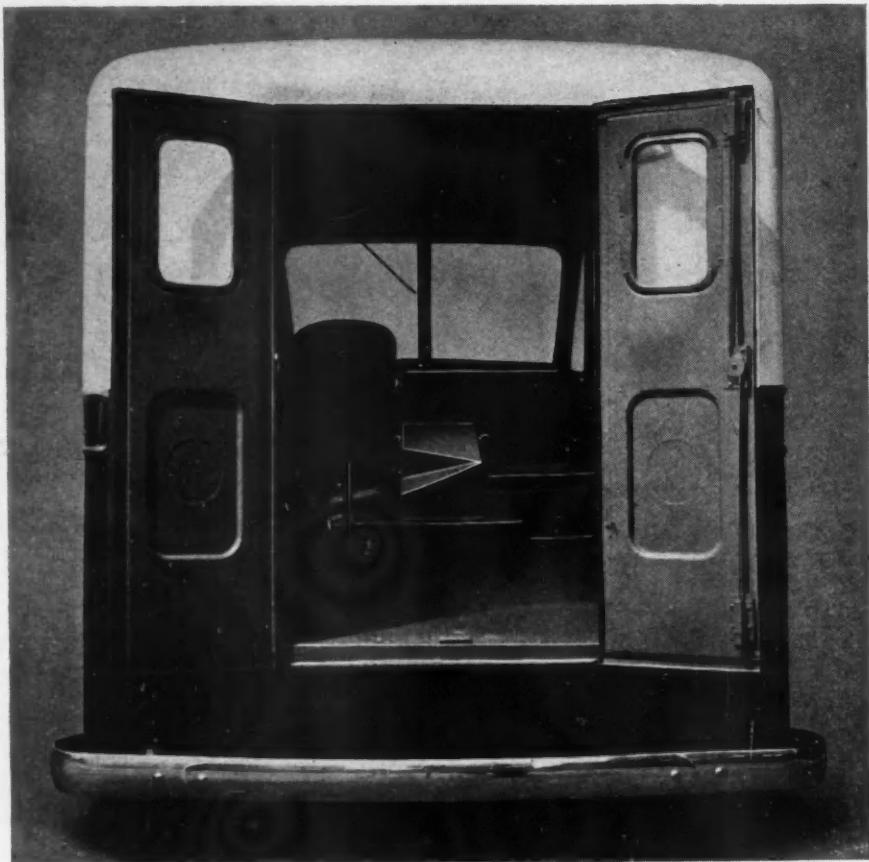
largest casket manufacturer in the country. All of its metal caskets and the greater part of the wood models are manufactured at the Boyertown plant, the world's largest casket factory under one roof. Manufacturing branches are also maintained in Ohio, California, and at near-by East Greenville, Pa. Retail branches are located in all principal cities, and it has proved economical to serve eight of these from the Boyertown plant by motor truck. These branches are at Harrisburg and Philadelphia, Pa.; Newark, N. J., and New York, Brooklyn, Bronx, Jamaica and Albany, N. Y. Daily round trip runs are made to each of these branches except Albany which is a two-day 16-hour round trip and a second daily trip is frequently made to the nearer points, during peak seasons. In addition many caskets destined for ultimate rail or boat shipments to distant points roll out of Boyertown by truck.

Seventeen trucks make up the factory fleet, of which a dozen are of the heavy-duty specialized type, scheduled for daily over-the-road haul to the branch points. Featuring a drop-frame, bus-type chassis, these trucks all have unusually low platform heights and high stake bodies.

Figuring out the space occupied for the rear axle and wheel housing, the total load comes to 36 boxes. The length of these trucks crowds right up to the State's 33-ft. maximum length limit, but since load weight is not beyond the capacity of a single rear axle, six-wheel construction or the use of semi-trailers has not been necessary.

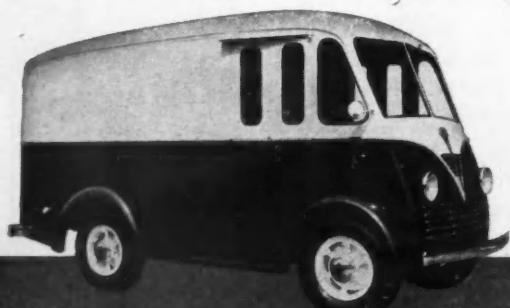
The remainder of the fleet are standard platform jobs with a nominal rating of 2½ tons. These are used for local deliveries to eastern Pennsylvania points, and for auxiliary service on the line-haul runs. In addition all of the company branches maintain small fleets of delivery trucks some serviced in their own garages and some through outside arrangements. Except in the case of tire and gasoline purchases it has not proved practical, however, to interrelate these branch operations with the factory fleet and each operates as a self-sustaining outfit. But since most of these delivery fleets are of semi-standard construction, and operate within relatively low total mileage brackets, maintenance at the branch houses is of considerable less importance than it is at Boyertown where the trucks are expected to perform

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MACK'S NEW RETAILER

Door-to-door model has 280-cu.-ft. body; 103-in. wheelbase and 210-cu.-in. engine



MACK TRUCKS, INC., announces a new Mack Retailer on a 103 in. wheelbase which has 110 in. of body length behind the driver's seat at the belt line. The body is 68 1/4 in. wide and the inside height is 78 1/2 in. This gives 53 sq. ft. of floor space and 280 cu. ft. of body capacity. The overall length, bumper-to-bumper, is 190 1/2 in.

The body is all-steel construction with steel floor beams and body frame work welded together. The roof is sheet metal and is insulated with 1 in. Wadex insulation. The plywood floor is covered with galvanized sheet metal. The round wheel housings and side panels are not lined.

The powerplant is a six cylinder L head engine with a 3 3/16 in. bore and a 4 3/8 in. stroke giving 210 cu. in. of piston displacement. The power output is 67 hp. at 3000 r.p.m. and the torque is 145 lb. ft. at 1100 r.p.m. An economy package consists of a special head with a 6.38 compression ratio, a distributor with vacuum advance and a special updraft manifold with economy ports.

Inserted exhaust valve seats, nickel-cast-iron tin-plated pistons, oil-type air cleaner, cooling tubes direct to exhaust valve seats and a four bearing counterweighted crankshaft are all features of the engine.

The 15 gal. gasoline tank is mounted on the right hand side while a 115 amp. hr. battery is located in the step well on the left hand side. The clutch is a 10 in. single plate unit of 100 sq. in. area of engagement. The shift lever is on the steering column. There are three forward speeds.

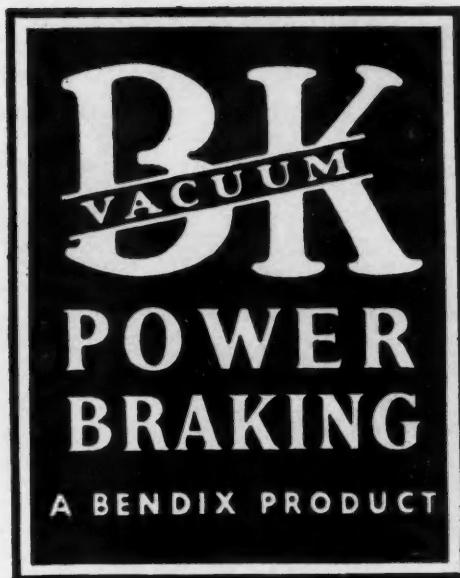
A standard ratio of 5.57 is the final gear reduction and 5.12 and 6.33 ratios can be obtained at extra cost. The rear axle is full floating. Internal hydraulic brakes have a front axle area of 107 sq. in. and the rear brakes have 129 sq. in. for a total of 236 sq. in. The steering gear reduction is 15.1 to 17.1.

The complete unit with 7.50-17 tires front and rear weighs 4450 lb. distributed 2200 lb. on the front axle and 2250 lb. on the rear axle. Without the body the chassis weighs 2600 lb. with 1540 lb. on the front axle and 1060 on the rear axle.

Equipment includes a swivel type driver's seat, two ventilators, two windshield wipers and two rear-view mirrors.

MORE *with*

**— not more money, but
more *for* your money**



The whole idea of Power Braking is to provide, for the man who wants the utmost stopping surety and ease, the fullest possible measure of both of these sensible needs on the trucks he operates.

That has been our objective, ever since Vacuum Power Braking was pioneered, years ago, by the now famous B-K system. How well Bendix B-K Controlled Vacuum Power Braking does the job is plain to read in its world-wide popularity, its years of service on many millions of trucks.

Today, the rapidly-expanding Bendix manufacturing facilities bring added assurance to the automotive industry—greater engineering and research staffs, finest production equipment, augmented capacity, trained personnel. Your insistence upon Bendix B-K Power Braking on the trucks you operate or sell is a wise recognition of more for your money.

BENDIX PRODUCTS DIVISION
BENDIX AVIATION CORPORATION

South Bend, Indiana

In Canada: Bendix-Eclipse of Canada, Ltd., Windsor, Ont.

BENDIX B-K

COMMERCIAL CAR JOURNAL
MARCH, 1941

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**PIONEER OF VACUUM
POWER BRAKING**

more than meeting all state laws for trucks and trailers

more efficiency with less weight and fewest parts added

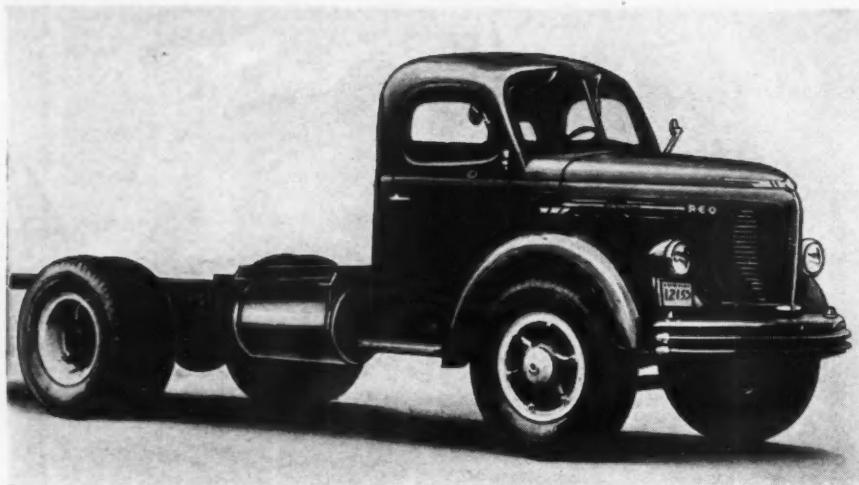
more economy—practically no operating or maintenance cost

more ease of installation and accessibility for routine servicing

more positive and more accurate control under all conditions

more modern engineering and quality manufacture

more NATION-WIDE SERVICE FACILITIES THAN ALL OTHERS COMBINED



Reo's new 35,000-lb. chassis will have 517-cu. in. Waukesha engine

REO ADDS 5 HEAVY JOBS

New models range from 17,000 lb. to 35,000 lb. g.v.w. Two Reo and three Waukesha engines are used

FIVE heavy-duty models have been added to the Reo line for 1941. All of them have hydraulic brakes and all of them can be fitted with air brakes. All of them follow the Reo Moreload design for which 18 to 20 in. more load space on shorter wheelbases is claimed. The new models are 21H rated at 17,000 lb. g.v.w., 22H rated at 19,500 lb., the 23H rated at 22,000 lb., the 25 rated at 26,400 lb., and a fifth model rated at 35,000 lb.

Model 21H is listed at \$1,515 and rated at 17,000 lb. gross vehicle weight. The chassis is equipped with 7.00-20 tires, duals on the rear, and

weighs 4820 lb. 8.25-20 tires can be fitted. This model is powered by a Reo engine with six cylinders and a bore of 3 1/2 in. and a stroke of 5 in. giving 288 cu. in. of piston displacement. Horsepower is 88 at 2200 r.p.m. and maximum torque is 215 lb. ft. Compression ratio is 6.1. There are seven main bearings.

A Clark 185F four-speed transmission and a Timken 55411 full-floating, spiral-bevel axle are standard equipment. Final gear ratios are 5.71 to 1 and 7.4 to 1. Four-wheel internal hydraulic brakes having 354 sq. in. of lining area are used. Frame side rail dimensions are 9 x 3 x 1/4 in.

Model 22H, priced at \$1,908 is rated at 19,500 lb. g.v.w. With 7.50-20 duals the chassis weighs 5825 lb. 9.00-20 tires are available. The Reo engine has a 310-cu.-in. displacement and a bore of 3 5/8 in. and a 5 in. stroke. The horsepower is 93 at 2700 r.p.m. and the maximum torque is 234 lb. ft. Compression ratio is 5.8 to 1.

A Timken 56411 full floating, spiral-bevel axle with ratios of 6.16 and 7.4 are used. The Clark 231F transmission has four speeds. Brakes are internal hydraulic and have 402 sq. in. of braking surface.

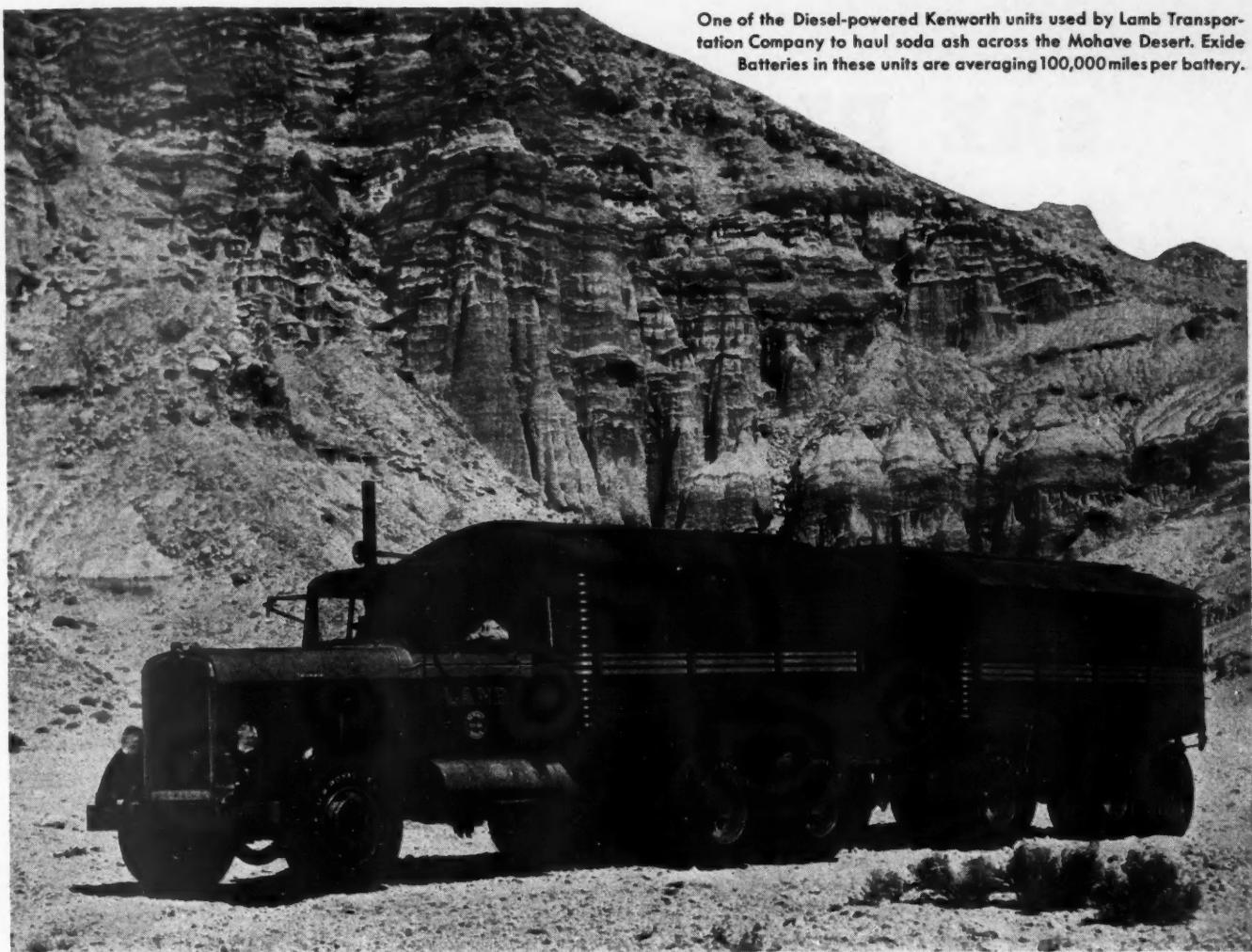
The 23H chassis is available at \$2,925 with a g.v.w. rating of 22,000 lb. Chassis weight is 6640 lb. It has 8.25-20 standard tires and 9.75-20 tires can be had on order. It is powered by a Waukesha 6MKR engine of 381 cu. in. piston displacement. The bore is 4 1/8 in. and the stroke is 4 3/4 in. Horsepower is 97 at 2500 and maximum torque is 270 lb. ft. Like the other engines it has seven main bearings and is equipped with a governor.

This engine is coupled with a Clark 205VO five-speed transmission and a Timken 72300 rear axle of the double-reduction type. The optional ratios are 7.35 and 8.4. The internal hydraulic brakes have 406 sq. in. of braking surface. The frame side rail dimensions are 9 1/8 x 3 1/16 x 5/16 in.

Model 25 is priced at \$3,432 and rated at 26,400 g.v.w. Chassis weight is 7150 lb. It is equipped with 9.00-20 tires and can be fitted with tires as large as 11.00-20. The Waukesha 6MZR engine is the power plant. This engine is rated at 106 hp. at 2600 r.p.m. and the maximum torque is 288 lb. ft. The bore is 4 1/4 in. and the stroke is 4 3/4 in. for a displacement of 404 cu. in.

A Clark 270V transmission is used with a Timken 1337 double reduction axle. The final gear ratio is 8.59 to 1. Braking surface of the internal hydraulic brakes is 476 sq. in. The frame side rail dimensions are 9 1/8 x 3 1/16 x 5/16 in.

Another model using the Waukesha 6SRKR engine is included in the line but all of the details of this model are not yet available. The engine will have 517 cu. in. piston displacement and a hp. rating of 125 at 2250 r.p.m. The torque is 368 lb. ft. at 600 r.p.m.



One of the Diesel-powered Kenworth units used by Lamb Transportation Company to haul soda ash across the Mohave Desert. Exide Batteries in these units are averaging 100,000 miles per battery.

Exide Batteries help Lamb Transportation Company truck 20-ton payloads across Mohave Desert like clockwork!

IT'S HOT and it's rough . . . and a long way between service stations. The Mohave Desert between Death Valley and Los Angeles is no place to have battery trouble or a possible starting failure with heavy-duty Diesel-powered equipment. Yet the Lamb Transportation Company of Southern California operates a fleet of such units which haul 20-ton payloads over this route with clockwork regularity.

The dependability of Exide Batteries helps this company live up to its slogan—"Service that Moves."



Exide
HEAVY-DUTY
TRUCK BATTERIES

From below sea level to 8,000 feet above, from summer temperatures of 120° to below zero in winter, the heavy-duty Exides in this operation are delivering an average of 100,000 miles per battery.

Exide Batteries for heavy-duty service average 25% longer life today than even Exides have ever delivered before. These batteries are also available with wood and fiberglass separators for "cycling" service. See your Exide distributor for full details, or write us today.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

SAE PLANS VARIETY OF FLEET STUDIES

AT the first meeting of the 1941 Transportation and Maintenance Activity Committee of the SAE held on Jan. 6, at Detroit, T. L. Preble, supervisor of automotive transportation, Tidewater Associated Oil Co., and newly elected vice-president of the SAE, representing that activity, proposed a committee organization plan which contemplated the appointment of five project committees to study various phases of fleet operation. This plan was promptly voted into a program by the Transportation and Maintenance Activity committee.

To make sure of cooperation of the project committees with one another and other SAE activities, a Coordinating Committee consisting of the project committee chairmen, with H. O. Mathews, engineer, Public Utility Engineering and Service Corp., as chairman, was elected. Other members of the Coordinating Committee are: S. B. Shaw, auto engineer, Pacific Gas and Electric Co., who is vice-chairman; A. M. Wolf, chairman of the Meetings Committee, and J. Y. Ray, supervisor of auto equipment, Virginia Power & Electric Co.

The Project Committee designated as Committee A is headed by Randolph Whitfield, supervisor of auto equipment, Georgia Power & Electric Co., as chairman. This committee will study special public utility problems. The subjects for study have been selected from 130 suggestions by SAE members. Specifically the subjects assigned to this committee are:

1. Tractors for off-the-highway work.
2. Transportation for heavy transformers.
3. Mounted air compressors.
4. Power take-off driven equipment.
5. Snow plows on utility trucks.

Heading Committee B is S. B. Shaw who, with his committee members,

T&M activity sets up maintenance, management, design and bus and utility projects



T. L. PREBLE

Tidewater Associated Oil Co. and Chairman, T & M Activity Committee

will study Maintenance Control and Research. Detailed subjects up for consideration by this committee are:

1. Engine deposits—prevention and removal.
2. Tire maintenance, retreads and puncture seal tubes.
3. Preventive maintenance and inspection procedures.
4. Service and preventive maintenance on small isolated fleets.
5. Cleaning, polishing and painting.
6. Frequency of failures—develop form for presenting to manufacturers.

Committee C has G. D. Gilbert,

superintendent of motor vehicle equipment, Illinois Bell Telephone Co., as chairman and has Fleet Management problems to study. The six approaches to the problem are:

1. Training of mechanics and drivers.
2. When to retire equipment.
3. Garaging of various types of fleets.
4. Company vs. outside maintenance.
5. Enhancing "Intensity of Usage" (that is, work factor) of vehicles and vehicle pooling.
6. Effective workable safety programs.

Emil P. Gohn, test engineer, Atlantic Refining Co., heads up Committee D, which will work on Equipment and Design factors. This committee will start on:

1. Relative merits of "gadgets"—oil filters, rectifiers, air cleaners, defrosters, etc.
2. Wheel spacing and rim sizes for duals (research for standards).
3. Engine temperature control.
4. Recommendations for brake lining testing.
5. Load distribution factors.
6. Minimum torque for gross vehicle weight rating.
7. Design elements affecting safety.
8. Batteries and carriers—standardization for interchangeability.

Committee E will consider special bus problems with J. A. Harvey, operating engineer, Pittsburgh Motor Coach Co., in the chair. The subjects listed for early consideration are:

1. Brake maintenance relative to live loads.
2. Air conditioning and ventilation.
3. Transmission and clutch systems.
4. Performance testing.
5. Windshield glare from interior lighting—for present and future equipment.
6. Static charges on buses and remedies.
7. Eliminating vapor lock.
8. Standards for location of driver's seat, steering wheel, pedals and hand brake in buses.

The Transportation and Maintenance Activity Committee now plans a quarterly progress report on the work of the project committees in order to keep the membership aware of what they are doing.

Another **FEDERAL CLEAN-UP SQUAD**
Swings Into Action . . .

SCHENECTADY'S EFFICIENT MUNICIPAL MANAGEMENT IS SYMBOLIZED IN THE SELECTION OF A FEDERAL FLEET—FOR CITY SANITATION . . .

Collecting waste, rubbish and the garbage of a modern city—keeping it spotless, sanitary, healthy—is a big time job that calls for big time truck performance—*without a let-down*. This illustrates a typical Federal Truck job . . . because Federal Trucks are tailored to the toughest assignments, built to stand up and "take it" under the worst conditions. These heavy duty models are bed-rock trucks with an established record for low cost operation that makes them a "budget bet" where efficiency and performance count. And Federal's low first cost economies can't

be overlooked any more than Federal's reliability and savings can be underestimated. So when any city or fleet owner selects Federal Trucks, one thing is almost certain: *Ton-mile costs are being cut to the bone.*

When you select Federal, you're paying rock-bottom prices for the "tops" in either conventional or Cab-Over-Engine models. And you have a modern, up-to-the-minute, "job fitted" truck that doesn't whimper when the loads get heavy and the going gets tough. Check on Federal Trucks today . . . verify their payoff on performance, their lower prices, lower upkeep costs.

From 3/4-Ton to Highest Tonnage Capacities, Federal Has a Truck "Tailored to Fit the Job"

We Repeat:
"Toss the TOUGH JOBS
to FEDERAL"

FEDERAL MOTOR TRUCK CO., DETROIT, MICHIGAN

For 31 Years—Known in Every Country . . . Sold on Every Continent

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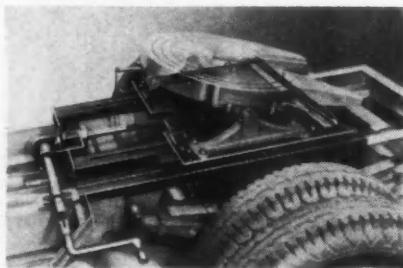
"TON FOR TON IN '41—FEDERAL LEADS THE WAY!"

SHOWCASE OF NEW PRODUCTS



Adjustable Fifth Wheel

A mechanism providing for the adjustment of wheel loading on a tractor-trailer after the vehicle has been loaded has been announced by Zoder, Inc., 1516 N. 14th St., St. Louis, Mo. Known as the Zoder



Equaloder, the device consists of a movable steel platform on which is mounted a standard fifth wheel. By adjusting the position of the platform, weight can be shifted forward leaving the rear axle with proportionately less. Advantages claimed are greater loads within legal limits, long tire life, easier driving and greater safety. Adjustments are made by means of a crank, easily accessible.

Lightweight, Air-Cooled Drill

A lightweight, compact electric drill with a capacity of $\frac{1}{2}$ in. in steel and $1\frac{1}{4}$ in. in hard wood has been added to the line of equipment manufactured by the

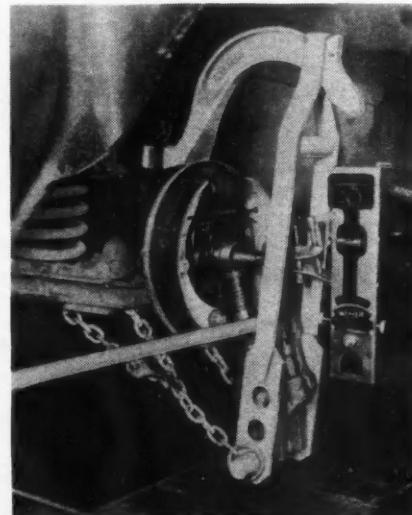


Snap-On Tools Corp., Kenosha, Wis. It is powered by a universal type motor which is cooled by a fan mounted in the arm-

ture shaft. A pistol grip is centered below the weight of the body to give balanced operation. Enclosed in an aluminum alloy die cast housing, the new unit is equipped with ball and needle roller bearings, as well as helical cut gears, for quiet operation. Full load speed is 300 r.p.m.

Knee-Action Camber Corrector

Designed for operation on knee-action units, a camber correcting outfit is announced by the Weaver Mfg. Co., Springfield, Ill. With this new outfit, camber on coil type knee-action cars may be increased



or reduced by making the necessary bends in the knuckle support arms. Picture also shows the Weaver Camber-Caster-King Pin Gage, which is a separate piece of equipment.

New Anti-Corrosive Paint

"Koroplate," a new grade of Koroseal paint developed to protect metal surfaces against excessive corrosive conditions, has been announced by the B. F. Goodrich Co., Okron, Ohio. A liquid at ordinary temperatures, it can be either brushed or sprayed. It is available only in semi-glossy black and must be used in conjunction with a Koroseal primer with similar characteristics. It is not recommended for constant immersion in liquids.

Magnus No. 782 Cleaner

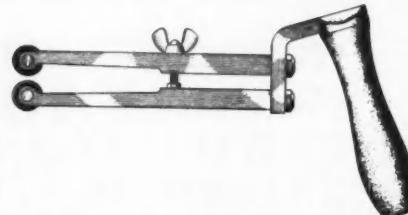
Magnus Chemical Co., Inc., Garwood, N. J., announces the development of a new cleaning compound, MAGNUS No. 782. It is a cold tank cleaner especially compounded for the removal of fuel residues (gums, tetraethyl lead deposits, etc.) from carburetors and fuel pumps. In use, parts are immersed in the fluid for about 15 min. Following this, the parts are lightly brushed, rinsed with safety solvent and blown off with air.

Besides removing fuel residues, Magnus No. 782 is said to soften and remove lacquer, paint and similar coatings as well as oil, grease, dirt and carbon without adverse effect upon any kind of metal.

For a limited time, the 3½-gal. capacity Magnus Parts Cleaning Outfit, consisting of a dipping tank and perforated dipping basket, shown in the illustration, is being given free with the initial purchase of one case of six 1-gal. cans of the cleaning fluid.

New Piston Resizing Device

A low cost, piston resizing hand tool has been announced by the Sealed Power Corp., Muskegon, Mich. The two bars each support a wheel, one being narrow and rounded and used on the inside of the skirt, and the other wide and flat and used on the outside of the skirt. As the



tool is moved back and forth, the compressing and swaging action of the narrow roller, being on the inside of the skirt, is said to expand the piston by changing the contour of the skirt's curve. The new tool is being offered through Sealed Power jobbers with the purchase of Sealed Power Rings.

Essolube HD, a New Heavy-Duty Lubricant

A new lubricant for heavy-duty engines has been developed by the Standard Oil Company of New Jersey and will be marketed under the trade name Essolube HD. The troubles which this new lubrication product is specifically designed to prevent include ring sticking and varnish formation on pistons. The new lubricant is a compounded oil of the metallic soap type. It is claimed to combine highly detergent properties with a high viscosity index and high stability. Its viscosity index of close to 100 is said to be nearly twice that previously available in special detergent oils

(TURN TO PAGE 51, PLEASE)



"A.W." QUALITY PLATES

From Mine to Consumer . . . Carbon, Copper or Alloy Sheared Plates—in any open hearth analysis to meet your specifications. Welding qualities, toughness, abrasion resistance, ductility . . . Ingots, Billets, Blooms, Slabs, Sheared Plates, Hot Rolled Sheets. Floor Plates for every flooring need. Steel Cut Nails in all types and sizes. "Swede" Pig Iron—Foundry, Malleable, Basic, Bessemer. "A.W." Products have been an accepted standard for steel buyers for more than a century.

ALAN WOOD STEEL COMPANY, CONSHOHOCKEN, PA.

SINCE 1826 : : DISTRICT OFFICES AND REPRESENTATIVES—Philadelphia, New York, Boston, Atlanta, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, New Orleans, St. Paul, Pittsburgh, Roanoke, Sanford, N.C., St. Louis, Los Angeles, San Francisco, Seattle, Montreal.

NEWSCAST



ICC OK's Rail-Truck Operations

In a sweeping decision written by Chairman Eastman, the Interstate Commerce Commission has opened the trucking field to the railroads limiting their field of operations only to the fact that shipments must originate and end at points served by the rails. The old provision that trucks could be used only for shipments which moved part way by rail has been removed, thus eliminating the necessity of maintaining local freight rail service. A substitute provision, however, does prohibit the rails from using trucks for shipments from "one key point to another key point."

Said Mr. Eastman in part: "We are persuaded, that the motor portion of such co-ordinated service could most efficiently and effectively be supplied either by the rail carriers themselves or by motor carriers under their control rather than by existing independent motor carriers."

Tennessee Lifts Weight Limit

Both houses of the Tennessee legislature have passed a bill raising the maximum gross allowable weight for trucks from 24,000 lb. to 30,000 lb.

Fuel & Lubricant Symposium

A fuel and lubricant symposium was held by the American Transit Association in Detroit, Feb. 17 and 18, and will be reported in a subsequent issue.

Pa. Turnpike Offers Discount

The Pennsylvania Turnpike Commission has announced a 10 per cent discount on monthly tolls between \$1,000 and \$2,000 and a 20 per cent discount on monthly

tolls over \$2,000. A fare requisitioning system is being tried out on the toll road that would eliminate the necessity of carrying cash fares. Any company wanting to take advantage of the plan would have to post a \$5,000 bond at Harrisburg and pay each statement within 15 days of billing.

Arnold Urges Barrier Curb

Thurman W. Arnold, United States Assistant Attorney General has joined the campaign against trade barriers set up by the various states. In a statement to the temporary National Economic Committee, which is studying the barrier problem, Mr. Arnold recommended that Congress empower the Federal Trade Commission to investigate these statutes which interfere with interstate commerce and to obtain injunctions to prevent their enforcement.

Auto-Lite Safety Awards

A few months back we told you about the awards being offered by the Electric Auto Lite Co. to safety directors of winning fleets in the National Truck Safety Contest which ends on July 31. Recently announced details indicate that there will be 16 awards in all; eight firsts and eight seconds, in the following classifications:

Local operations—11 to 25 vehicles; 26 to 50 vehicles; 51 to 100 vehicles, and 101 or more vehicles. Long distance operations—11 to 25 vehicles; 26 to 50 vehicles; 51 to 100 vehicles, and 101 or more vehicles.



Officials of the City of Schenectady, N. Y., line up with representatives of Federal Motor Truck Co. in tribute to the city's new fleet of Federal garbage trucks. The Gar Wood "Load-Packer" bodies are of fully-enclosed type.

Getting Personal

Herbert D. Bissell, for the past 11 years an executive of N. W. Ayer & Son, Inc., has been named advertising manager of the Electric Auto-Lite Co., Toledo.



Richard C. Murphy (left) and John G. Martin have been named by the Ethyl Gasoline Corp. as Western and Eastern regional managers respectively

G. A. Green, in charge of engineering activities at Yellow Truck & Coach Mfg. Co., has been appointed consulting engineer to the Secretary of War and at his own request has been relieved of responsibilities at Yellow. He is succeeded by C. O. Ball.

Freeman G. Allen, recently appointed general service manager of the White Motor Co. His last assignment was that of district manager at Minneapolis



Dodge Division of Chrysler Corp. has named John G. Graham and Frank E. Seaman as regional managers at Oklahoma City and Boston respectively.

Court Upholds "Car-Over-Cab" Ban

The West Virginia ban on "car-over-cab" operations, has been upheld by the U. S. Supreme Court upon the basis of prior decisions.

Kentucky Offers Special Permits

A recent order of the Kentucky Commissioner of Highways authorizes special overweight permits for defense shipments by truck. Subject to detail restrictions as to routes and other information, the order would permit gross weights to 32,000 lb. and lengths to 35 ft.

Anti-Strike Pact in N. Y.

An agreement which prohibits strikes or lockouts for a period of two years and names Hugh E. Sheridan as sole arbitrator of disputes has been consummated by trucking interests in New York City. Signers of the agreement include three locals of the International Brotherhood of Teamsters, for labor, and the Merchant Truckmen's Bureau, Highway Transport Association and the Master (TURN TO PAGE 48, PLEASE)

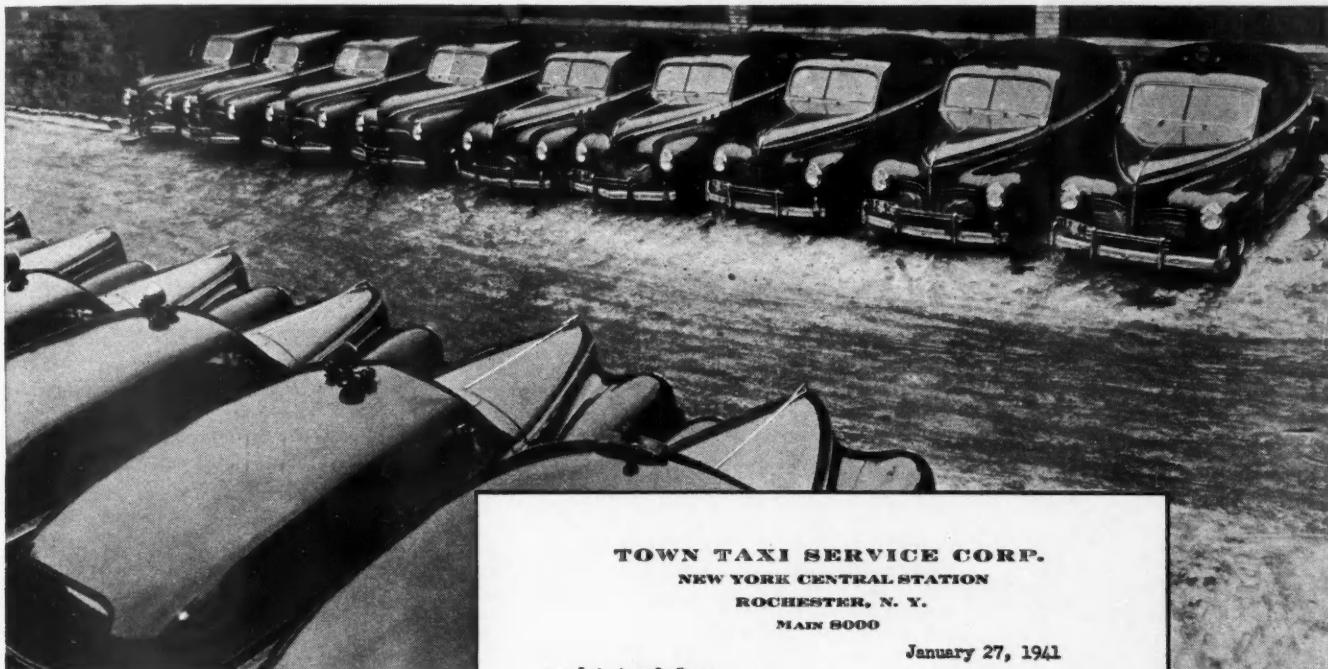
TOWN TAXI *SAVES* with LUBRI-ZOL

MOTOR OIL
Mileage Increased

GEAR LUBRICANT
Mileage Increased

GASOLINE
Mileage Increased

Secy.-Treas. Kaplan submits a three-year fleet record:



For hundreds of fleet operators, Lubri-Zol lubricants are saving time, saving trouble, saving expense. Lubri-Zol keeps motors cleaner—free of sludge, gum and hard carbon—it's extra oiliness and higher film strength minimize scuffing and scoring and wear that come from metal to metal contact.

Write today for particulars. Let us send our fleet engineer to help you reduce your lubrication costs. No obligation, of course. The Lubri-Zol Corporation, Cleveland, Ohio.

TOWN TAXI SERVICE CORP.
NEW YORK CENTRAL STATION
ROCHESTER, N. Y.
MAIN 8000

January 27, 1941

The Lubri-Zol Corp.
Euclid Station
Cleveland, Ohio

Gentlemen:-

We have used Lubri-Zol Products for our fleet of 43 taxicabs for about three years with a great saving in operating and maintenance costs. We feel that this has been done through the use of Lubri-Zol Products, which have proven superior to any other lubricants we have been able to obtain, and the fleet maintenance program which Lubri-Zol helped us develop.

We previously had a number of transmission and differential failures, high oil consumption, low gasoline mileage, considerable valve trouble, and sludge. All of these troubles have been corrected, along with a mileage increase of 80% on gear lubricants, 60% on motor oil, and 12% on gasoline.

We highly recommend the use of Lubri-Zol Products to other fleet operators.

TOWN TAXI SERVICE CORP.

David Kaplan
David Kaplan, Sec. & Treas.

Fully Protected by U. S. and Foreign Patents

*Buy your oil on
the cost per mile...
and save.. with*

LUBRI
REG. U. S. PAT. OFF.
ZOL

NEWSCAST (Continued from Page 46)

Truckmen of America, for management. The choice of Mr. Sheridan, a member of the trucking firm of Sheridan & Duncan, as arbitrator was attributed to his background as a truck driver holding a union card, an employer of union drivers and former head of the Merchants Truckmen's Bureau.

General Tire Expands

General Tire & Rubber Co. announces steadily rising sales of truck tires and considers it a reflection of the increase in construction and the greater amount of

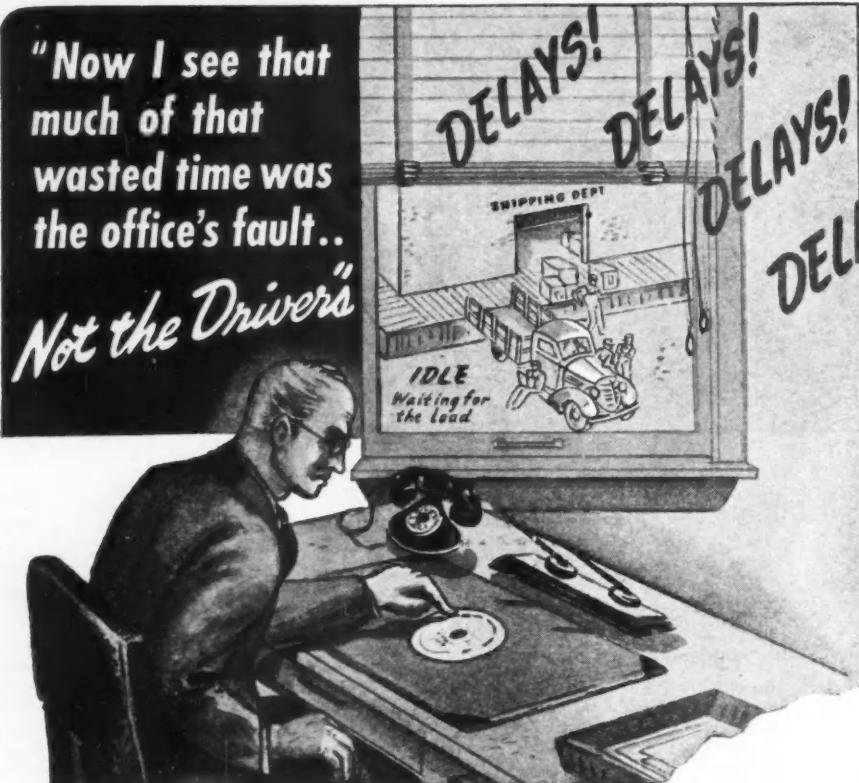
freight being shipped by trucks. Construction has been started on a new building which will increase floor space of the Akron plant by 25 per cent.

Farris Heads National Truck Show

Clayton Farris, president of Trucktor Corp., Newark, N. J., has been elected president of the National Motor Truck Show, Inc., succeeding J. F. Winchester. The following were elected as vice-presidents of the corporation: John F. Creamer, Wheels, Inc.; George Kuhlman, the Heil Co.; Harry E. Slater, Thornton Tandem Co., and Elbert E. Husted, Titeflex Metal Hose Co. S. E. Oplinger of the Steel Products Co., Inc., is secretary-treasurer.



James G. Hayden (right), for the past five years fleet safety director of National Safety Council, has joined Horton Motor Lines, Inc., as fleet engineer. Before past safety awards he discusses future safety problems with Morgan Speir, Jr., safety personnel director, and H. D. Horton, president.



A Truck's Time Is Expensive!

• This man is putting his finger on delays. (They all show up on the chart, taken from a *Servis Recorder*.) Here's half an hour standing time, here 20 minutes, here nearly an hour! He checks into these delays—and often finds that the

Driver's Not to Blame!

Here's a truck waiting for its load for 2 hours, at a cost of \$2 or \$3 an hour! Here's a truck with a short afternoon route, getting in at 3:30 and nothing more to do until closing time.

Here's a truck held up at the freight station, which could be corrected; here's a truck bucking the rush hour traffic unnecessarily;

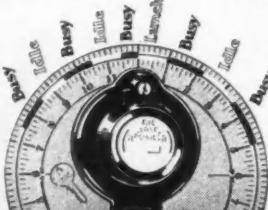
here's a truck that's overworked, causing costly overtime!

Time! Time! Time!

It's all a problem in TIME—and of course the *Servis Recorder* gives you all this busy-idle information, on its chart, at a glance.

Write for free booklet: "Ten Ways of Getting More Work Out of Motor Trucks."

The SERVICE RECORDER CO.
1375 Euclid Ave., Cleveland, O.



The Servis Recorder
The Good Driver's Best Friend

When writing to advertisers please mention Commercial Car Journal

Freightways to Chicago

Consolidated Freightways, recognized as the world's longest highway freight line has extended its operations eastward from Minneapolis to include Duluth, Superior, Eau Claire, Rice Lake and Chicago. The company has operated westward from the Twin Cities to 700 western and Pacific Coast markets for years, and now offers six-day West Coast deliveries from Chicago.

IMTA Reelects Cotant

The seventh annual convention of the Idaho Motor Transport Association, held February 7-8 at Boise, Idaho, reelected J. O. Cotant, of Pocatello, president for the third time. Other officers named were O. R. Craven, Pocatello, vice-president and Chet Moulton, Boise, secretary.

PMTA Asks New Limits

Basing their demands on the restrictions of neighboring states and on improvements in truck design, the Pennsylvania Motor Truck Association is seeking modification of existing laws to permit the following standards:

Length, single vehicle	35 ft.
Length, combinations	50 ft.
Maximum weight, 2 axle	
truck	30,000 lb.
Maximum weight, 3 axle	
truck	40,000 lb.
Maximum weight, tractor-semi	50,000 lb.
Maximum weight, any one axle	22,400 lb.

"Al" Aldrich Dies

A. D. Aldrich, of Philadelphia, Pa., formerly in charge of the Newton Coal Co. fleet, and prominent in state and national truck association affairs, died suddenly on Feb. 19.

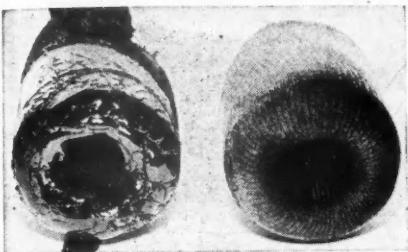
Fleetman Available

A fleetman with 15 years of experience as shop superintendent for a large bus operator is available. He has had special training on costs and efficiency and is now living in central New York. For further information, address the editor, COMMERCIAL CAR JOURNAL, Philadelphia.

NEW PRODUCTS

(CONTINUED FROM PAGE 44)

meeting the full range of known heavy-duty engine requirements. In addition to inherent resistance to high temperatures and oxidizing influences, it is claimed to



Both filters were in use 3000 miles. The left one had oil of poor stability; right one had new Essolube HD

have exceptionally high ability to wash out sludge deposits, to protect bearings against corrosion, and to practically prevent the formation of varnish on pistons, valve stems, rings and other engine parts.

Detergent oils are not new, but it is pointed out by Esso engineers that heretofore oils with sufficiently high detergent properties to eliminate ring sticking, varnishing, and sludge deposits in the full range of present-day heavy-duty engines have had to utilize base stocks of relatively low viscosity index, for chemical reasons. While such oils increased the cleanliness of the engine markedly, in many engines oils are required whose base stock also shows high resistance to oxidation and does not induce bearing corrosion. A major problem for petroleum chemists therefore has been to develop an oil which, while possessing the detergent properties required, had in addition the high stability usually associated with lubricants of high viscosity index. Although the viscosity index in itself is not a direct measure of oil stability, laboratory evidence is said to show that stability of an oil under heat and oxidizing influences usually increases with the viscosity index.

We are informed that Essolube HD has been exhaustively tested both in the laboratory and in service. It has passed the severe General Motors diesel test, which calls for a 500-hour run in a General Motors high-speed diesel engine under full load and at full speed without oil change, and it has been also formally approved by the Caterpillar Tractor Company for use in its diesel engines, having passed the severe 1000-hour endurance test in a Caterpillar engine under both laboratory and field conditions. Essolube HD is said to be the first high-viscosity-index lubricant to obtain Caterpillar approval and also the first high-viscosity-index lubricant to have passed both the Caterpillar and General Motors engine test requirements. Many engineers consider the requirements of these two engines to be opposite extremes in the diesel field, so that an oil which meets them both should be satisfactory for any heavy-duty engine.

Bear Precision Gages

A low-priced set of precision gages to test wheel alignment has been announced

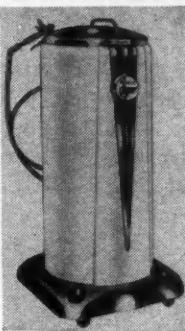
by the Bear Mfg. Co., Rock Island, Ill. The set includes a combination caster-camber-king pin inclination gage, a pair of turning radius gages, a toe-in gage and a tire scriber. A specially designed display board is furnished with the gages.

Williams Tappet Wrenches

A new tappet wrench set is being offered by J. H. Williams & Co., 225 Lafayette St., New York City. Known as No. 1042, the set contains eight, thin, light-weight wrenches featuring a 15 deg. angle of opening at each end. The wrenches are drop-forged from special steel, heat-treated and chrome-finished.

New Alemite Equipment Offered

Four new lines of lubrication equipment have been announced by the Alemite Division of the Stewart-Warner Corp., 1876 Diversey Parkway, Chicago, Ill. Featured mechanical additions are an air valve of the sliding type, positive priming and a device which automatically releases the pressure in the grease hose when the air line is disconnected.



**DRIVERS LIKE TO KNOW
THE POWER & ECONOMY
RANGE OF TRUCKS...
AND THERE'S ONLY ONE WAY!**

STEWART-WARNER MOTOR MILE TACHOMETER

**...NOW YOU CAN SERVICE
TRUCKS on a basis of
actual "MOTOR MILES"
instead of haphazard
"ROAD MILES"**

TRUCK drivers are people. They take pride in their work. Increased efficiency, better gas mileage, lower maintenance costs—these are all a matter of pride to them. That's why drivers like the Stewart-Warner Motor Mile Tachometer, which keeps them aware of the power and economy range of their trucks—and makes it easy for them to stay within that range!

Startling savings are reported by fleet owners as a direct result of using Stewart-

Warner Motor Mile Tachometers. As much as 25% savings in gas and oil—and as much as 25% reduction in repair bills!

Learn more about this amazing instrument, which records r.p.m. in "motor miles"—making it possible for your trucks to be serviced on a basis of actual engine operation rather than haphazard "road miles." Get the facts about big savings others have made. Mail the coupon NOW!

STEWART WARNER MOTOR MILE TACHOMETER

STEWART-WARNER CORPORATION
1876 Diversey Parkway • Chicago, Ill.

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago, Ill.

We operate.....Trucks. Please tell us how Stewart-Warner Motor Mile Tachometers can help us reduce costs.

Name.....

Address.....

City.....State.....

Firm Name.....

MONROE TRUCK SHOCK ABSORBER

A NEW direct-acting shock absorber with a two-inch piston and designed for use on motor trucks, has been announced by the Monroe Auto Equipment Co., Monroe, Mich.

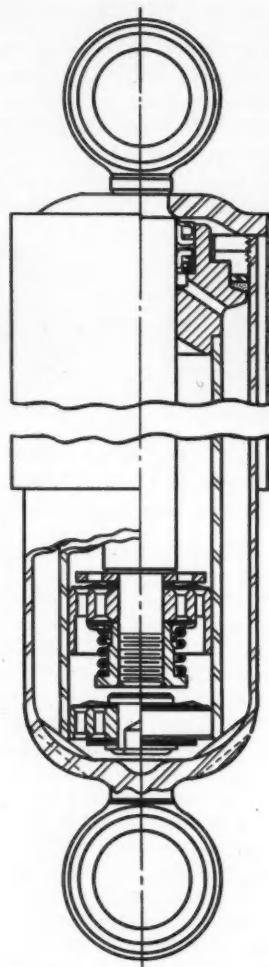
Like other Monroe direct-acting shock absorbers it features a relatively high displacement of fluid resulting in lower internal pressure. In operation, the control on the rebound side of the stroke is accomplished by means of a flexible steel disc, supported by a coil spring which is assembled on the lower side of the piston. The stronger the spring, the higher the control.

On the compression side of the stroke, control is established by a valve in the base which carries a stack of discs, held in place by a central rivet which is spun-over. These discs are located on the under side of the base valve, control being

increased by adding more discs to the stack.

The construction of these shock absorbers is relatively simple. It consists of a pressure tube in which the piston operates, the tube being held in place by end pressure through a piston rod guide. This guide, in turn, is kept in place by a threaded ring screwed into the upper end of the reserve chamber. The lower, or reserve, tube is made in one piece by a new process which forms its lower end into a cup shape by rolling. A forged loop for chassis attachment is welded to this lower end.

The upper assembly consists of a piston rod to which is secured a cap with a forged loop similar to that used in the base welded in position. The piston rod is sealed at the piston rod guide by a specially designed seal. A dust tube welded to the cap completes the upper assembly.



Cross section drawing of new 2-in. Monroe shock absorber for truck use

NEW ICE-O-MATIC COMPRESSOR UNIT

MINIMUM weight, simplicity of design and rugged construction are features of the new Williams Ice-O-Matic Truck Refrigeration unit. Its narrow width (22½ in.) meets the space requirements below the floor of the vast majority of semi-trailer or truck units.

The power unit, normally mounted under the truck body is inclosed in a protective housing with louvers on the bottom, back and front thereby assuring abundant air circulation. The frame is of 2 in. by ¼ in. angle iron arc-welded to 12-gage steel panels.

The Williams Ice-O-Matic compressor is driven by either a 3, 4, or 5 hp. vertical, single-cylinder, four-cycle, air-cooled gasoline motor, according to the requirements of the installation.

A patented automatic two-speed control eliminates the need for complicated electrical controls. The operation of this control shifts the engine from normal to slow speed or vice versa, depending upon the temperature requirements of the truck body.

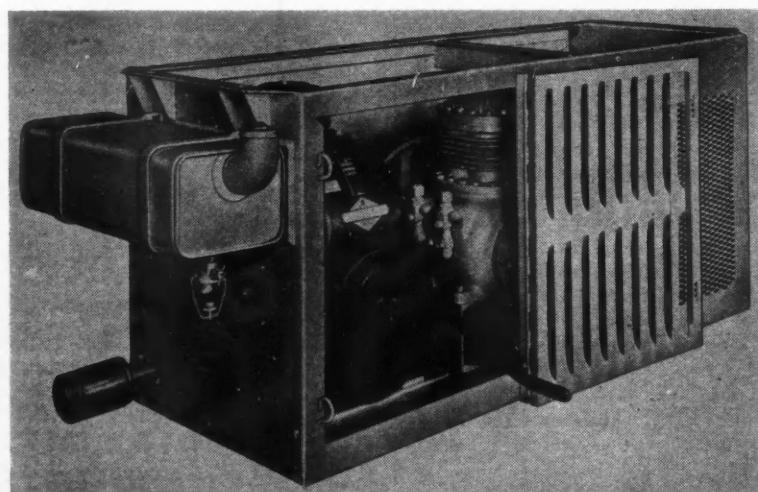
A two-cylinder, vertical reciprocating type, air-cooled compressor is used. Freon is the standard refrigerant with Methyl Chloride optional.

Pressure feed lubrication by internal gear pump assures positive lubrication and dry crankcase prevents oil slugging.

Both fin-type and plate-type coils can be used with Ice-O-Matic units.

Ice-O-Matic also offers compressor equipment for a great variety of truck installations, using hold-over plates or blower-type cooling units as well as gravity coils. Compressors may be

powered by gasoline engines, by power take-off, or by electric motors with plug-in attachments. Larger compressors for central installation capable of charging a number of truck hold-over plates are also available.



Completely self-contained Ice-O-Matic power unit

You can lick an oil pumper quicker with
SEALED POWER
Individually Engineered
PISTON RING SETS

EVERY RING IS FINISHED
 WITH FRICTION-REDUCING,
 SCUFF-RESISTING GRANOSEAL



THERE ARE COMPLETE
 INSTALLATION INSTRUCTIONS
 IN EVERY PACKAGE

THESE SETS ARE AVAILABLE
 FOR ALL POPULAR MAKES
 OF CARS AND TRUCKS



EVERY RING IN THESE
 SETS IS INDIVIDUALLY
 ENGINEERED



SEALED POWER
PISTON RINGS

BEST IN NEW CARS! BEST IN OLD CARS!



BODY OF THE MONTH

(CONTINUED FROM PAGE 33)

road. Behind him are twin seats for relief drivers and for distinguished guests in local street parades in show cities. Access to the compartment is through a door at the right front and up a short flight of gray-linoleum-covered stairs and there is an emergency door in the steel roof above the seats. The opening of the door in the front of the Futur-liner

automatically extends a patterned, bottom steel step.

Foot controls are of the treadle type with corrugated rubber treads. On each side the treadles are set off by chrome plates, line-etched. The modernistic instrument panel is placed conveniently in front of the steering wheel. Clutch and shifting controls are operated by air.

The airline interior of the driver's compartment is done entirely in royal blue Bedford cord, gray leather, chromium, and satin-finished

aluminum, with heat-insulated floor, covered with gray linoleum. The compartment, with a curved-dome turret, is heated and ventilated by forced draft. Leather-covered crash pads encircle the compartment directly below the turret.

Below the turret-dome in front and below the rear license plate are sets of directional arrows and all the Futur-liners are equipped with musical horns which play bits of popular tunes when desired in street parades.

Unique is the individual show-lighting fixture atop each Futur-liner. This fixture is made in the form of a steel-and-aluminum fin, 15 ft. long and 2½ ft. wide. This retractable lighting tower, shaped like a canoe upside down, tucks away, when not in use, in a trough in the Futur-liner top, forming an integral part of the advanced streamlined design. When in use, the light tower rises 18 ft. above the ground and throws down a broad canopy of bright light.

By a half-horsepower motor, the light tower is raised automatically in three minutes. Attached to the center of the underside of the fin are 6½-ft. halves of a streamlined steel strut which, coming together in the center as a complete, single strut, raise the fin and support it in the air. Nuts affixed to the lower ends of this divided strut ride in a longitudinal screw, threaded left for half its length, right for the remainder. The motor turns the screw, moving the strut-nuts to the center, and the fin stands up to light the roundabout show ground.

Inside each Futur-liner has been built an exhibit to portray a share of the philosophy of the exposition. Some of these exhibits move and talk mechanically, while others are in charge of flesh-and-blood demonstrator-commentators. To show these exhibits to the public, the Futur-liners are arranged upon a suitable plot of ground in a show city and their two steel-and-aluminum sides opened electrically, top doors rising to form marquees, bottom doors dropping to floor level for the stage extensions.

Each door, extending from front wheelbase to rear wheelbase, is 16 ft. long. The top door is 45 in. wide, the bottom 36 in. Hinged to the leading edge of the top door, so that it

(TURN TO PAGE 58, PLEASE)



MIDLAND
(CHRISTENSEN)
Power Brakes



When writing to advertisers please mention Commercial Car Journal

Refinish with Ditzler

DEPENDABLE ENAMELS IMPROVED SHOP SYSTEMS NEW SERVICE FEATURES



FLEET owners are switching to Ditzler Fleet Finishes in ever-increasing number. Why? Because Ditzler Fleet Finishes save *time* and *money*. How? By cutting down time in the paint shop—by worthwhile *labor* and *material* savings—by *extra mileage* on the road.

The Ditzler Fleet Program for 1941 includes many important product and service features that will help you keep better looking trucks on the road—at *lower cost*.

Ditzler's famous "PS" colored undercoats—practical shop systems and methods to speed up shop schedules and cut costs—expert color styling service to assist you in the development of new color schemes—all are included in the Ditzler Fleet Service Program for 1941. Ask your Ditzler Jobber for complete details.

DITZLER COLOR COMPANY, DETROIT, MICHIGAN



INDUSTRY SINCE 1902

(CONTINUED FROM PAGE 54)

can be folded back for packing, is a light trough housing fluorescent tubes. Each set of two doors is operated by a 1/3-hp. motor.

The top halves of the Futur-liners are finished in permanent red, the lower halves in anodized corrugated extruded aluminum strips, 6 in. wide. These strips are screwed to the body and the screw-heads are covered by chromium-plated snap-on inserts.

Below the Futur-liner floors are storage compartments with drop

doors opening on both sides of each unit. These compartments carry the batteries for the unit and sectional steel fencing, as well as other exposition properties.

Eleven of the Futur-liners are powered by GM 4-71 two-cycle diesel engines. These engines are four-cylinder units developing 110-hp. at 2000 r.p.m. The other Futur-liner has a GM truck gasoline engine of 451-cu. in. piston displacement. The maximum road speed of the units is 55 m.p.h.

The engines are located directly beneath the driver's compartment. Mechanic can gain access to them in three different ways—through a left side front door, through a right side front door, or by removing the flooring of the driver's compartment.

The bodies of the Futur-liners are combined aluminum and steel. They are mounted on conventional type frames. They have nearly 800 cu. ft. of loading space for exhibits.

DOWN TO EARTH MAINTENANCE

(CONTINUED FROM PAGE 37)

over long periods at good road speeds.

To the mechanical ingenuity of Amandus Moyer, head mechanic of the factory fleet, Boyertown Casket owes much of its success in keeping its trucks rolling profitably and its trucking costs so low that competing contract carriers have never gotten past the records of purchasing agent W. M. Yerger.

Under Mr. Moyer's direction preventive maintenance is a continuous process. Although there are no printed forms to follow or fixed mileages for inspection periods, knowledge of the truck's condition is nonetheless thorough, for Mr. Moyer and his two assistants, familiar through long service with nearly every bolt on every truck, make it their business to note and correct irregularities. In this they are aided, of course, by the driver's oral report on condition of the truck after each run.

In several instances troubles have not only been spotted before they occur, but steps taken for the prevention of any possible future occurrence of the same thing. Batteries, for instance, were a source of considerable inconvenience if not full-fledged troubles. As supplied by the manufacturer, battery boxes were mounted on the frame underneath the forward end of the unusually low slung bodies. Lack of accessibility consumed too much time and encouraged slip shod maintenance. So new boxes were constructed in the shop of welded steel and mounted on the right running board where service and testing

(TURN TO PAGE 60, PLEASE)

DOUBLE ACTION
... with a single purpose

in the new

ZENITH
GOV-U-RETOR

... to save you money!

TAKE the finest type of governed speed control, combine it with the finest type of truck carburetor into a single, engineered, integral unit, and you have the new Zenith Gov-U-Retor.

Its purpose is to give your engine more efficiency and save you money. Proof that the Zenith Gov-U-Retor is living up to its purpose is its great success. Thousands of fleet owners and operators of single vehicles are enthusiastic about it.

They tell us emphatically that Zenith Gov-U-Retor is better in every way than separate Carburetor and Governor installation. It positively eliminates cheating by throttle manipulation, maintains efficient fuel flow, provides more constant speeds on grades and hills and smooth, positive governing action on the level. Downdraft and updraft types to fit most popular engines. Save money. Get complete information—

Write!

ZENITH CARBURETOR DIVISION
BENDIX AVIATION CORPORATION
696 HART AVENUE
DETROIT, MICHIGAN

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
MARCH, 1941

TOUGH
but oh so gentle



TOUGH ON OIL-PUMPING . . . GENTLE ON CYLINDER WALLS

• Here is one of the reasons Hastings Steel-Vent Piston Rings have risen to front-rank popularity among fleet owners.

A transit line owner in Detroit writes:

"We overhauled one truck at 40,000 miles which had had Hastings rings in for a year. We found it in excellent shape.

"We also had a 2-ton truck with 50,000 miles

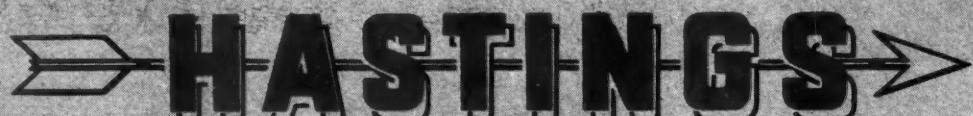
which was using two gallons of oil from Detroit to Cleveland. We installed Hastings and the first 700 miles it used one pint of oil. We are now using nothing but Hastings rings . . . and getting better service at less cost."

* * *

To stop oil-pumping and check cylinder wear — standardize on Hastings Steel-Vents.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICHIGAN

Piston Rings • Piston Expanders • Valv-Rings



STEEL-VENT PISTON RINGS

U. S. Patent Nos. 2,148,997, 2,175,409

Stop Oil-Pumping • Check Cylinder Wear

(CONTINUED FROM PAGE 58)

operations could be carried out with utmost ease. Instead of being hinged, the top was fitted with two lugs which engage two holes on the outer side. On the other side, a spring loaded clasp holds the top in place. By releasing this one clasp, the entire top comes off. Cables leading into the box through the inner side are protected by short length of standard heater hose which not only protects them from chaffing but from chemical action as well. Lag bolts with lock

nuts are also mounted on the inner side and form a simple means of clamping the battery in place laterally. To complete the job a non-skid step plate was mounted on the top and two drain holes cut through the bottom and through the running board. Obviously batteries now receive careful attention and leakage or corrosion can be detected at once. Each of the boxes is so built that it can house two six-volt batteries instead of the original 12-volt unit, with the result that replacement battery

costs are lower while battery life, through extremely careful maintenance, has been nearly doubled.

Another example of avoiding trouble before it occurs is in the way the truck mirrors are mounted. That part of the body which extends over and is slightly wider than the cab provides a perfect position insofar as utility of the mirror is concerned. But even more than in most locations, mirrors were subject to physical destruction should the truck rub shoulders with another truck, a door way or any other object. The answer was a swivel mount for the stub arm of the mirror so that it could be pushed back completely within the body limits without harm. A spring-loaded pin holds the arm in outermost position during normal service.

Boyertown trucks are lubricated every two weeks regardless of mileage, a schedule which has proved satisfactory based on many years of operations. Because the trucks are very large and the garage small, it was not found practical to centralize the lubrication operation. A portable lubricator was the answer but this, too, required either an air hose connection or more recently at least an electric connection, neither of which was desirable. So Mr. Moyer extended the base of his caster-mounted standard air-line lubricator and mounted an air tank, which can be charged at the air line with approximately 160 lb. of pressure, and in sufficient volume to lubricate one entire truck without an appreciable drop in pressure.

Each truck is equipped with a removable-cartridge oil filter and oil is changed at varying intervals that average about 8000 miles. Physical appearance is relied upon as the only test of oil condition.

A monthly tune-up of ignition and gasoline supply units, plus the shop's accurate record of gasoline and oil consumption for each truck provide the key to major overhauls, as well as minor adjustments. Valves are ground only when conditions indicate that the procedure is necessary and the interval sometimes runs into six-figure mileage. When the valves are ground, oil consumption usually indicates that rings are needed also and if the wear is greater than .010 in. new pistons and a rebore are in order. Bearings are always checked

(TURN TO PAGE 62, PLEASE)

Now one man can remove and replace heavy wheels . . . a job that formerly took two or even three men. He can do it quicker, too! The Weaver Wheel Dolly is simply run up under the jacked-up wheel, the weight of the wheel is transferred to the Dolly and both wheel and Dolly are then pulled away from the car or truck. Does away with the old danger of sprains or ruptures. Pays for itself in a short time by saving labor. Write for particulars.



*Slightly more on West Coast.

WEAVER MANUFACTURING CO.

SPRINGFIELD, ILLINOIS, U.S.A.

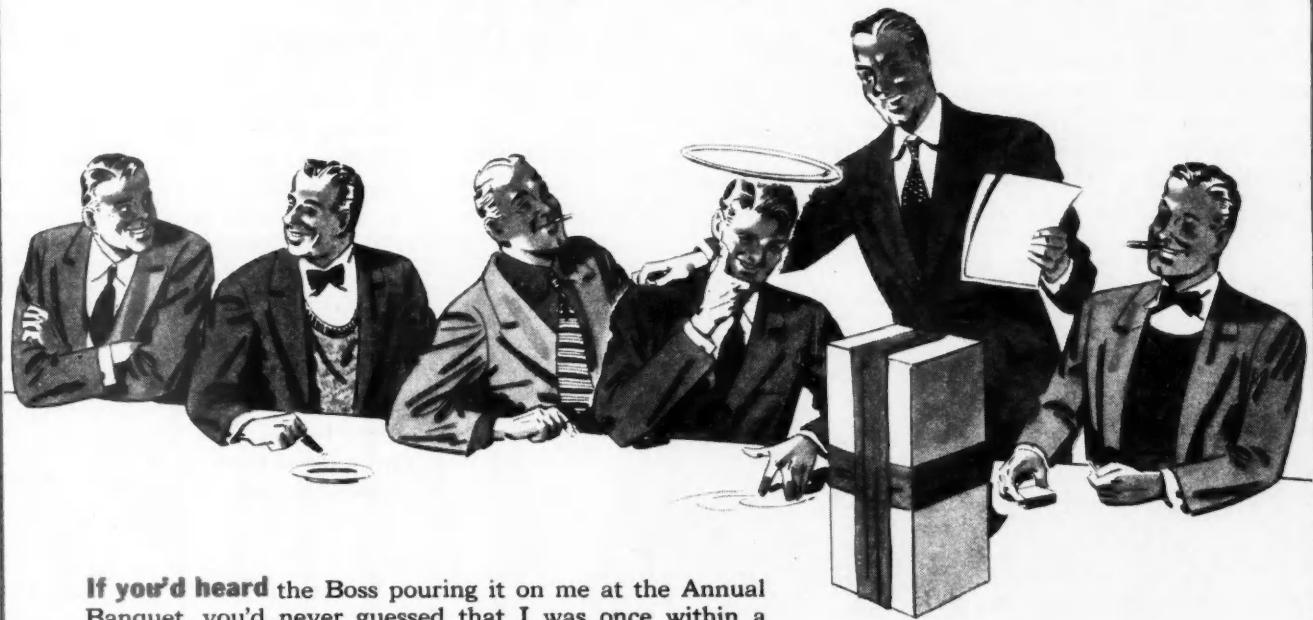
Chatham, Ontario, Canada

London, England

WEAVER

MAINTENANCE MAN HEADED FOR THE BUM'S RUSH

Now the Fair-Haired Boy!



If you'd heard the Boss pouring it on me at the Annual Banquet, you'd never guessed that I was once within a split hair of getting the boot, but le'me tell you:



Last winter the yearly check-up shows lots of brake complaints and low mileages on my lining jobs. The Boss darn near blows his top. I figure I'm on my way out.



I know our brake lining does fair on some units, gives trouble on others. But I can't see how I can risk tryin' around for just the right lining for each job.



Then a guy pops in to explain American Brakebloc's 3 types of brake lining for manual, vacuum-booster and air brakes, a new Advisory Service, dope on brake load, route conditions. We go to work.



Now, I get lining that's sweet on all routes and all units. I haven't had a brake complaint in months, my lining mileage and low costs won me a prize. And I can tip you off — write American Brakebloc!

Copyright, 1941, The American Brake Shoe & Foundry Co.

COMMERCIAL CAR JOURNAL
MARCH, 1941

When writing to advertisers please mention Commercial Car Journal

3 HEAVY-DUTY TYPES
EACH BEST FOR ITS OWN JOB

American Brakebloc Division of The American Brake Shoe & Foundry Co., Detroit, Michigan

(CONTINUED FROM PAGE 60)
when the engine is down and if of the slip-in type, they are almost always replaced.

Tires—mostly 9.75 with some 10 in. sizes—are watched carefully for any injuries, and pulled for retreading as soon as the tread is smooth. No failures from retreads have occurred in recent years, but the company has an arrangement with its retreaders that none but perfect carcasses be accepted. The result is an average retread mileage of approxi-

mately 20,000 miles as compared with an original 40,000. A few retreads, however, have gone as far as 70,000 miles without failure.

A simple shop-made branding iron provides a fool-proof means of identifying tires which have been damaged in service and which are not considered fit for retreading. The iron consists of a short length of 1/2-in. pipe, sharpened at one end. When heated, it burns a clean, easily identified circle in the side of the tire that means "no go" to the retreaders.

To the other end of the same tool, a small piece of steel in the shape of the letter "S" has been welded. This mark is branded into the few tires which have been retreaded twice. Possibility of a third retreading is thus eliminated.

Each truck carries a spare tire mounted vertically against the solid rear wall of the body on the outside. The present tire carriers have proved sufficiently strong to support the weight without failure, thus eliminating the necessity of a tire mounting within the cargo space. An interesting arrangement developed by the shop makes tire changing, even for 10-in. sizes a one-man job. (See illustrations and captions on page 36.)

All cabs are fitted with heaters, and rubber-bladed fans are mounted at the center of the windshield to handle defrosting needs. Low-mounted fog lights are also standard equipment on all trucks.

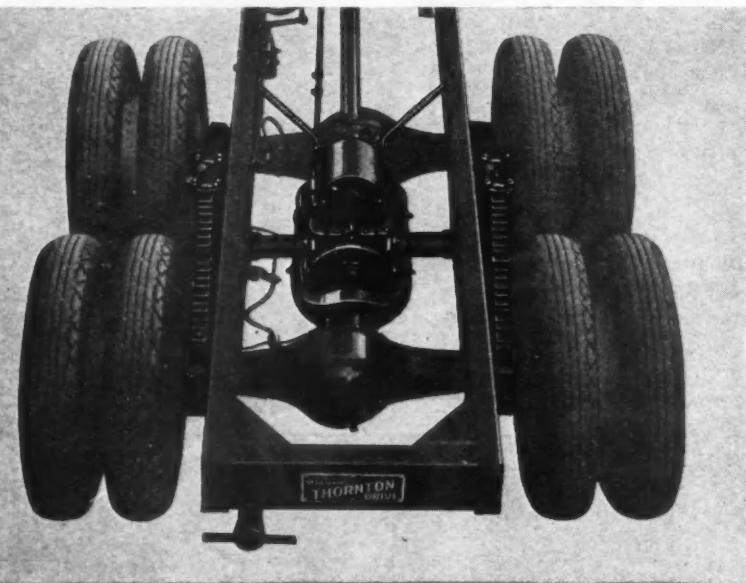
Painting presents no problem at Boyertown because of the stake body construction which leaves in addition to the wooden stakes only the cab, fenders, hood and chassis to be taken care of. The job is handled when needed by the factory paint shop using easy-to-match black and aluminum as standard colors. Touch-up work is done in the garage.

Shop equipment is held to an almost forbidding minimum, but the indispensables are there, including vacuum and compression gages, a drill press, valve refacer, battery charger, acetylene welding equipment, a bench grinder, an assortment of hydraulic jacks, a wheel gage and even a boring bar which happens to be the personal property of Mr. Moyer. In addition, the machine shop and wood-working shops of the main factory are available for emergency jobs, which, owing to the stake body construction, includes body repairs. With all assets added and a good dose of ingenuity mixed in, the shop boasts of virtually 100 per cent internal maintenance.

A recording device in every cab, plus accurate knowledge of the fixed routes over which the trucks are operated tells Delivery Superintendent J. Willis Schultz all he needs to know about driver conduct on the road.

END

(Please resume your reading at pg. 38)



SAVE 25-40% ON TRUCK INVESTMENT, 30% ON OPERATION, 35% ON UPKEEP

Those are the savings reported by scores of operators who are using **THORNTON Four-Rear-Wheel DRIVE**. The reason is simple and you also will be able to materially cut your costs. How? Instead of buying a big, expensive truck you can select a smaller one, add a **THORNTON Four-Rear-Wheel DRIVE** and carry your loads at greater profit.

The Thornton is far more than a

third axle. It is a completely engineered unit with two driving axles under the load. It will take heavy loads through where conventional heavy-duty trucks would be stalled and have to quit. Not only are you assured of greater traction and exceptional economy, but you also get greater flexibility and safety.

Why not send today for the complete story. The chances are great that **THORNTON** will solve YOUR hauling problem!

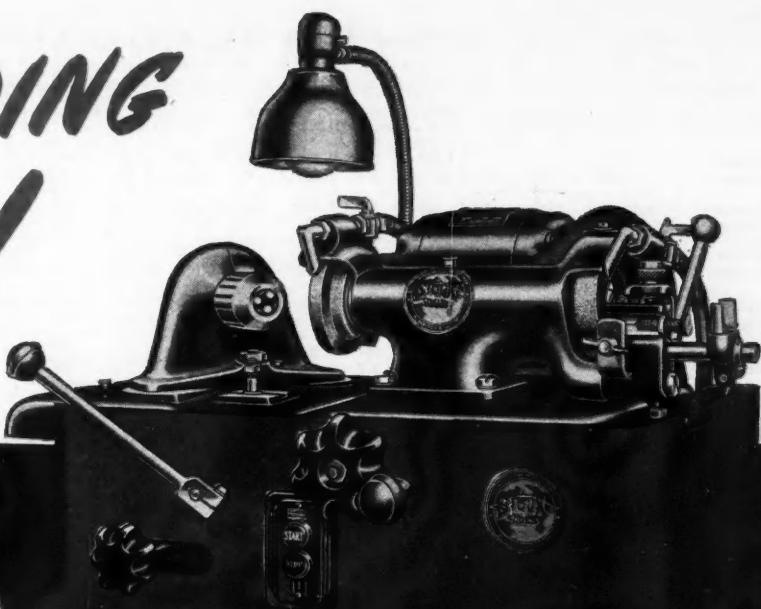
THORNTON TANDEM CO.
8701-8779 GRINNELL AVE.

DETROIT, MICH.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL which gives traction when slippery going makes trucks equipped with ordinary differentials helpless.

"When you need TRACTION you need THORNTON"

WET GRINDING
BUILT IN!



SIOUX

VALVE FACE GRINDING MACHINE
WET GRINDER

Designed and built from the base up for wet grinding — the neatest, most compact, most complete, most efficient machine of its kind yet developed.

Now you can easily, quickly and economically produce the finest finish and factory precision in wet grinding valves, Ford valve tappets, and Ford valve stem ends. Chucking capacity $\frac{1}{4}$ " to $\frac{5}{8}$ " diameter.

Now you can eliminate heat and distortion and reduce wheel dressing to a minimum.

Number 655 includes resilient-mounted $\frac{1}{3}$ H. P. motor, positive and smooth Vee Belt Drive, automatic chuck stop, ball-bearing grinding head, 3-quart coolant tank, perfected Sioux Roller Chucking System and other equipment.

ASK YOUR JOBBER'S SALESMAN

STANDARD THE
ALBERTSON & CO., INC.



WORLD OVER
SIOUX CITY, IOWA, U.S.A.

New Truck Registrations by Makes by Months

	Auto-car	Brock-way	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	Hudson	Intern'l	Mack	Plymouth	Reo	Sterling	Studebaker	White*	Willys	Misc.	Total
January.....1940	143	117	16,997	536	4,345	153	13,282	3,142	56	5,538	572	718	11	22	85	434	173	326	45,650
January.....1939	143	127	13,515	378	4,002	65	10,188	2,384	47	4,709	482	507	168	25	169	346	88	250	37,715
February.....1940	94	92	14,145	425	4,341	113	12,092	2,724	60	5,009	425	767	4	31	101	380	182	351	41,336
February.....1939	134	120,007	308	3,821	79	9,224	2,218	44	4,284	398	510	159	29	143	275	97	274	34,102	
March.....1940	137	123	18,398	573	5,356	161	14,993	3,457	76	6,943	534	949	6	24	154	660	233	316	53,093
March.....1939	150	168	16,565	392	4,852	122	11,886	2,772	39	5,507	483	879	175	17	190	373	148	385	45,083
April.....1940	156	102	19,429	563	5,654	152	15,444	4,071	92	7,049	656	1,070	7	35	133	840	222	307	55,982
April.....1939	149	139	16,748	518	4,755	152	11,849	3,243	53	5,713	551	1,025	107	24	173	426	145	293	46,063
May.....1940	158	143	16,982	501	5,459	151	13,816	4,334	92	6,743	756	1,065	6	25	112	631	225	374	51,553
May.....1939	184	175	15,899	427	5,185	173	11,706	3,215	44	5,359	666	1,118	78	45	196	442	168	301	45,381
June.....1940	127	121	14,246	533	4,412	116	11,847	3,357	67	6,291	561	902	20	30	103	574	188	209	43,504
June.....1939	182	177	14,046	408	4,442	123	10,606	2,740	47	5,105	588	889	53	25	209	446	185	220	40,482
July.....1940	180	153	16,384	642	4,731	121	14,447	4,252	64	7,104	718	999	78	28	77	476	248	231	50,913
July.....1939	300	170	15,432	436	4,562	116	12,514	2,872	43	5,744	541	946	31	28	229	379	133	271	44,747
August.....1940	112	137	17,053	587	4,724	121	12,380	3,900	34	7,397	661	685	93	30	92	470	214	290	48,980
August.....1939	185	148	14,327	449	4,709	158	12,090	3,031	28	6,101	524	793	28	38	238	377	92	209	43,523
September.....1940	134	131	11,394	530	3,488	134	10,804	3,204	34	7,081	639	434	99	22	74	551	206	265	39,224
September.....1939	191	157	9,132	496	4,166	159	7,288	3,091	11	6,297	556	439	18	23	165	497	99	195	32,983
October.....1940	429	247	14,901	601	3,928	140	14,380	3,212	49	7,755	842	568	104	29	109	588	172	282	48,356
October.....1939	183	181	13,091	570	3,244	251	7,694	3,198	10	7,136	774	515	20	26	162	464	145	269	37,923
November.....1940	156	171	15,990	458	3,995	121	14,264	3,356	62	5,335	760	627	103	37	45	839	121	177	46,618
November.....1939	157	154	14,579	522	2,446	217	12,312	3,383	5	5,160	599	364	8	28	150	417	162	321	41,286
December.....1940	149	135	19,119	408	4,182	134	14,781	3,477	75	5,646	630	789	94	28	122	901	107	338	51,095
December.....1939	106	121	13,713	508	1,860	202	11,532	2,771	38	4,933	508	309	8	18	86	292	174	281	37,460
12 months.....1940	1,955	1,672	194,058	6,358	54,615	1,817	162,356	42,486	761	77,891	7,754	9,573	625	341	1,207	7,344	2,291	3,466	1576,327
12 months.....1939	2,044	1,815	169,457	5,412	48,049	1,837	128,869	34,908	409	66,048	6,870	8,294	853	326	2,110	4,736	1,634	3,257	466,748
% change—12 mos....	-4	-8	+14	+18	+14	-12	+26	+22	+86	+18	+16	+16	-27	+5	-43	+55	+40	+7	+19

* Includes Indiana.

† Total includes 23 delinquent registrations which cannot be attributed to any one month.

Shippers' Motor Freight Guide

The fifth annual edition of the Shippers' Motor Freight Guide, a comprehensive di-

rectory of motor freight companies serving shippers in Michigan and the central industrial area, is now ready. Full de-

tails may be secured from the publishers, *Trucking News* (publication of Michigan Trucking Assoc.), Fort Shelby Hotel, Detroit.

NATIONAL SAFETY COUNCIL'S STANDARD SCHEDULE FOR SERVICING FLEET BRAKES

This, the first definite standard of procedure ever created for brake mechanic's workmanship, should guide the accepted definition of complete brake service, and protect the fleet owner's investment.

1. Preliminary examination—
- a. Test both service and travel brakes with trailer connected. If not available, or trailer not available, test on the road. Determine the break point of each wheel and the tendency to nervous or sudden stopping.
- b. Place vehicle on lift, if available, and examine brakes for wear, condition, and alignment. Examine for loose or binding of bearing, and for proper adjustment of wheel bearing.
- c. Check for signs of overheating.
- d. Check for signs of overheating.
- e. Check for signs of overheating.
- f. Check for signs of overheating.
2. Inspection, Adjustment, and Rebuilding of Brakes—
- a. Put all wheels on a wheel balancing machine and correct.
- b. Examine drum and drum bearing, and correct.
- c. Examine wheel bearing, and correct.
- d. Examine wheel bearing, and correct.
- e. Examine wheel bearing, and correct.
- f. Examine wheel bearing, and correct.
3. Inspection, Adjustment, and Rebuilding of Axles—
- a. Check for signs of overheating.
- b. Check for signs of overheating.
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4. Inspection, Adjustment, and Rebuilding of Axles—
- a. Check for signs of overheating.
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By having competent mechanics follow it in your shop you will protect drivers from brake failure in emergencies, and avoid gradual development of dangerous brake conditions. Regular inspection is a vital part of this schedule.

AIR BRAKES

1. Examine springs and support plates.
2. Examine and adjust head bands.
3. Make complete adjustment of head bands, also of foot pedal links or master cylinder, in case of hydraulic or air-over-rod or cable, cross shaft lever and foot pedal position or case of lever and rod.
4. Test brakes with brake testing machine on the road.
5. Check for signs of overheating.
6. Inspect, re-tighten, and re-align all fasteners.
7. Rebuild or replace.
8. Adjust so that linkage makes correct contact with master cylinder. Check for signs of overheating.
9. Inspect wheel shear grommets or bushes, and correct. Check for signs of overheating.
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CAPACITY RATING

(CONTINUED FROM PAGE 21)

2. Maximum Gross Combination Weight is the Maximum Authorized Gross Weight in pounds of a tractor-truck and any combination of trailers. It is made up of the sum of the weights of all chassis (including tractor-truck and trailer), cab, lubricants, water, full tank or tanks of fuel, all bodies, special chassis and body equipment, attaching parts and payload.

(This weight is the total which is authorized to be moved by a tractor-truck and is required in ability calculations. In the case of a tractor pulling a trailer or combination of trailers, the ability factor in pounds per horsepower is obtained by dividing the Maximum Gross Combination Weight by the Certified Net Horsepower.)

3. Maximum Gross Carrying Capacity is the maximum authorized weight in pounds which may be superimposed upon a truck chassis when equipped with the maximum authorized number

and size of tires. It is equal to the sum of the weights of cab, body, special chassis and body equipment, and payload.

(This figure obviously is an essential element of any rating since carrying capacity is the user's primary concern. While he is primarily interested in payload, the gross figure is recommended for the reason that the portion of the gross carrying capacity absorbed by body and equipment is subject to wide variation according to the kind and conditions of service to which the truck is to be applied. The purchaser of a chassis presumably knows the weight of the payload and the body and equipment required to accommodate it. He seeks a chassis adequate in capacity to carry this total load. Knowing the weight of the cab, body and equipment in each instance, the payload can be derived readily from the gross carrying capacity.)

4. Maximum Authorized Tire Equipment means the size, number of plies and number of tires on the load-carrying wheels of

the prime mover which, in accordance with Tire & Rim Association standards, is the maximum in capacity authorized by the manufacturer.

(Tire capacity should be adequate for the gross vehicle weight, it being assumed that the weight is distributed approximately equally among the tires. This assumption is not realized in practice much of the time, but the disparity is steadily becoming less and it is accordingly believed that it is justified for rating purposes.)

5. Structural Chassis Weight is the weight in pounds of a truck chassis without lubricants, water and fuel, less the weight of tires, radiator (including shell and grille), engine, clutch, transmission and propeller shaft assemblies.

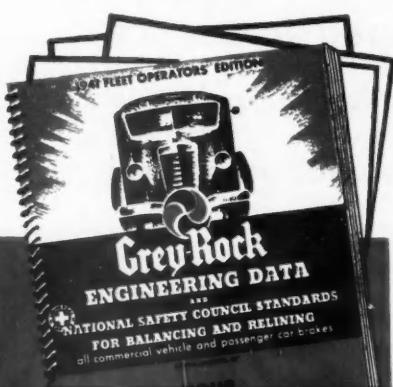
(This figure is somewhat indicative of the structural adequacy of the chassis. The exact analysis of any structure, such as a motor truck chassis, with respect to strength involves so many factors and such intricate calculations as

(TURN TO PAGE 68, PLEASE)

ADVANCES BRAKE-SERVICING ONCE MORE

Adopts the New N.S.C. Schedule....

Offers 1941's Finest Brake Servicing Plan



Grey-Rock, through its distributors, offers you a newer, bigger 72-page Brake Balancing Chart. It carries 61 pages of diagrams, drawings, and instructions, the latest Grey-Rock Engineering Methods for all vehicles, complete with correct clearances, adjustments, methods, and replacement materials. It includes the standard N. S. C. brake servicing schedule, adopted by Grey-Rock for fleets.

Grey-Rock distributors carry a full stock of outstanding replacement friction materials. Factory selected combinations of brake linings for all buses, trucks, and passenger cars and the famed Grey-Rock Vee-Lok Clutch Facings for smooth engagement with longer life.



Grey-Rock BALANCED TRUCK BLOCKS

UNITED STATES ASBESTOS DIVISION of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS • AUTOMOTIVE HOSE • RELINING EQUIPMENT



*Hey, Bill!-
hand me a
CARTER
REPAIR
PACKAGE!*



Division of American Car
and Foundry Company

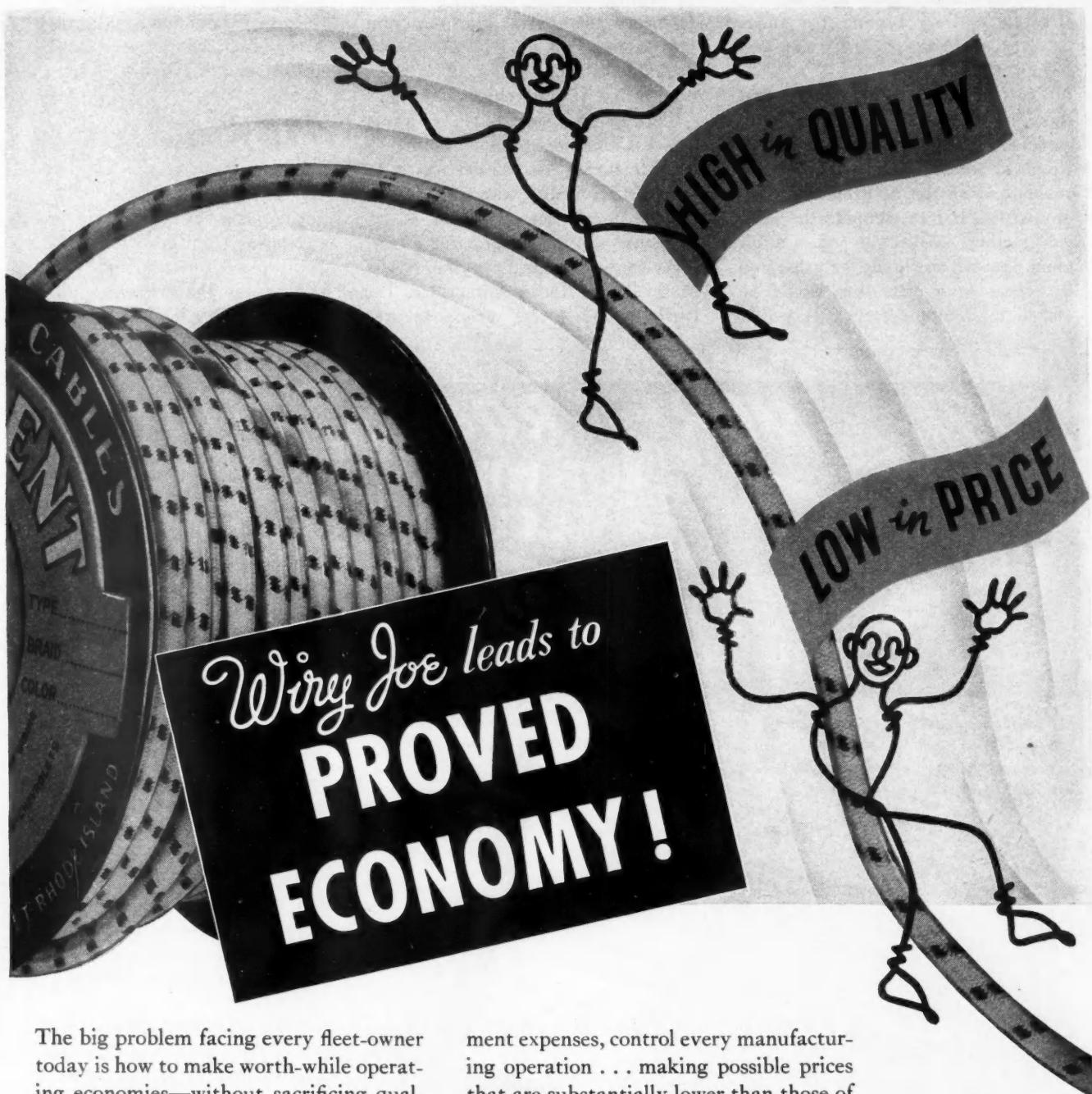
THIS one short sentence brings you all the parts you need to service a Carter Carburetor. Included are full instructions and specifications—all in one handy package!

CAR-BURETER
Registered in U. S. Patent Office
PRODUCTS OF PRECISION

CARTER CARBURETOR CORPORATION • 2820-56 North Spring Ave., St. Louis, Mo.

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL
MARCH, 1941



The big problem facing every fleet-owner today is how to make worth-while operating economies—without sacrificing quality. Wiry Joe gives you the perfect answer!

Made by the biggest independent in the industry, Wiry Joe guarantees the highest quality. And Crescent's exclusive methods eliminate top-heavy manage-

ment expenses, control every manufacturing operation . . . making possible prices that are substantially lower than those of lines of comparable high quality.

Wiry Joe Ignition Cable is available in spools, or in sets complete with spark plug terminals, rubber rain protectors, and distributor terminals. See your jobber!

*The
Wiry Joe line
covers every
automotive
wiring
application*



AUTOMOTIVE WIRING
PRODUCED BY THE



DOSTAM METHOD
BY THE

CRESCE^NNT CO. - Pawtucket, R. I., U. S. A. - Montreal, Canada

(CONTINUED FROM PAGE 65)
to be entirely beyond the range of practicability in the process of rating.)

The committee recommended that these five factors, together with certified net horsepower and the r.p.m. at which it occurs (to permit evaluation of the all-around ability of a truck and to compute the ability factor), constitute the minimum data which should be presented by means of a plate that would be affixed to a motor truck. It would

be permissible for individual manufacturers to expand the minimum information provided by the recommended plate by adding other items descriptive of the vehicle.

Permissible, yes; but the Motor Truck Committee of the Automobile Manufacturers Association which received the S.A.E. recommendations in due course has gone on record favoring a plate containing fewer facts than stipulated by the S.A.E. Motor Truck Rating Committee. The truck manufacturers' group favored

elimination of the Structural Chassis Weight, Maximum Authorized Tire Size, Maximum Gross Carrying Capacity and Maximum Gross Combination Weight factors from the identification plate.

The manufacturers argued that if the industry is to carry on its activity in effecting steps toward a uniform basis for licensing (this does not mean a uniform license fee) and is to place the emphasis on "gross weight" as the licensing factor, the identification plate would be a valuable asset in this educational activity if it included only the following:

"Manufacturer's Name and Address;

"Model Number and Chassis Number

"Certified Horsepower at R.P.M.;
"Maximum Gross Vehicle Weight."

Parenthetically, the A.M.A. made it understood that this "is the minimum information to be supplied on the plate."

It is quite possible that some manufacturers will exceed this minimum and, in so doing, furnish data which meets or approximates the S.A.E. recommendation. This possibility is definitely advanced by the A.M.A.'s acceptance "in principle" of some of the factors omitted from its recommended plate.

For example, after deliberating the subject of Maximum Gross Combination Weight, the following statement of principle was approved:

"The Motor Truck Committee of the Automobile Manufacturers Association agrees to accept the S.A.E. recommendation on 'gross combination weight' as provided in item No. 2 of the S.A.E. report. This information will be provided either on the identification plate or on the certified load capacity chart, as the manufacturers elect. The Committee agrees that this information should be supplied by the manufacturers to the owner as well as state and federal licensing bodies and other interested parties, on request."

Likewise, for example, the A.M.A. committee was of the opinion that it would not be desirable to include Maximum Gross Carrying Capacity on the identification plate at this time because its inclusion might prompt some states to use it as a basis for licensing, but recognizing that this information may be desired

(TURN TO PAGE 70, PLEASE)

Here's MORE PROOF OF WHAT WE CLAIM!

HUEY MOTOR EXPRESS
GENERAL OFFICE
FLORENCE, KENTUCKY
PHONE 182

ALS:
NO. KY.
OAK. KY.
LLE. KY.
TON. KY.
STOWN. KY.
NATT. OHIO

Mr. John B. Kingham, Vice Pres.
Kingham Trailer Company, Inc.
Louisville, Ky.

Dear Mr. Kingham:
We want you to know just how well pleased we are with the new light weight Kingham Zephyrs we recently purchased from your company.

Before purchasing the Zephyr we carefully compared it with other makes of popular trailer frames and concluded that the Zephyr X-braced frame together with the rubber mounted alignment device, the new mountain type rubber duty brake, and the streamline supports with compound gears, gave it a distinctive advantage over any other make on the market today.

Seven months have now passed since we purchased our first Zephyr and I wish to assure you that it has performed most satisfactorily. The Zephyr is all that you claim for it. It is of superior construction, light in weight, dependable, durable and serviceable.

With all good wishes for your continued success,
Sincerely yours,
HUEY MOTOR EXPRESS
W. R. Huey

HUEY MOTOR EXPRESS
LEXINGTON, DAYTON, OHIO
BANVILLE, CINCINNATI
COLUMBUS, OHIO
INDIANAPOLIS, INDIANA

KINGHAM TRAILER COMPANY
INCORPORATED
LOUISVILLE, KENTUCKY

MAIL THIS COUPON TODAY!

KINGHAM TRAILER CO., Inc., 15th and Hill Sts., Louisville, Ky.

Gentlemen:—We are interested in your new light-weight Zephyr trailer. () Please send us descriptive folder. () Please have your representative call on us.

NAME COMPANY

CITY STATE CCJ.



Sally checked on mileage—discovered that Raymasters gave *more than double* the mileage where terrific tire heat and heavy road shocks combined to cut short the life of conventional tires and gave *one-third more* mileage under normal conditions.



She checked on fuel consumption—her figure showed a 4% saving in gasoline since switching to Raymasters—the “U. S.” man told how the thinner, more flexible rayon carcass makes the tread absorb road inequalities better, roll easier, use 12½% less power.

She checked on recaps—found that 6 of the Raymasters had been recapped *with no rejects*. She even phoned the recapper who explained that Raymasters could be safely recapped several times.

The next time your local U. S. Distributor calls, give him *just 5 minutes*—the information he'll give you on this new kind of rayon tire can mean important savings to you.

You can't argue with Sally's figure

No one in the office would believe her figure on the mileage of the new rayon tires being tested on trucks #21 and #62. So to settle the argument the boss sent her out for a recheck—and here's what she found about the new U. S. Royal Raymaster:



She checked on tire failures—found that delays from tire trouble were cut to practically nothing. Asked the U. S. Distributor why, and he explained that the new Raymaster runs cooler, and withstands high heat—the biggest single cause of tire failures.



UNITED STATES RUBBER COMPANY

1230 Sixth Avenue, Rockefeller Center, New York, N. Y.

(CONTINUED FROM PAGE 68)
by users, state authorities and others, it adopted this statement of principle: "In lieu of placing information on gross chassis carrying capacity on the identification plate or on certified load carrying capacity chart, the Motor Truck Committee of the A.M.A. agrees that manufacturers will furnish this information to state officials, customers or other interested parties on request."

Also in the matter of Maximum Authorized Tire Size the A.M.A. did

not take an uncompromising attitude. It held that "in view of the program for tire simplification, and because of the discussions that are currently being held by tire manufacturers with the Safety Section of the Interstate Commerce Commission, which may have an effect on tire ratings, the tire situation presents so many complications that it requires review." It declared, therefore, that the "question of Maximum Authorized Tires be held over for further consideration in a year's time."

Only in regard to Structural Chassis Weight did the A.M.A. truck group record implacable opposition. It held that "structural chassis weight is a qualitative item; that it does not take into consideration the progress that has been made with metal alloys to gain equal strength in the chassis with less weight, and that if it were made a part of the rating it might be erroneously used as a factor in licensing by some states."

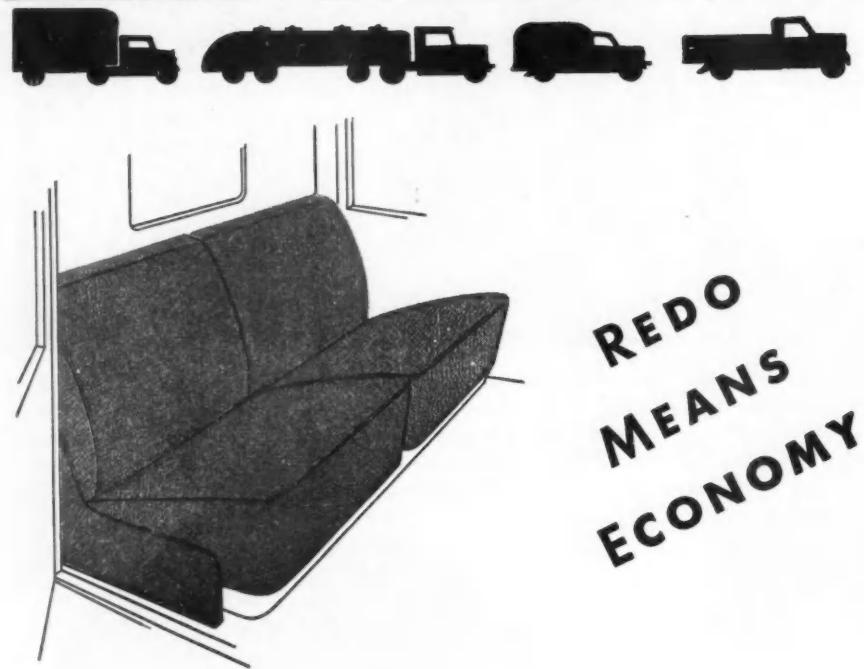
For the record it may be stated without prejudice to any one that an effort was made to have the S.A.E. Motor Truck Rating Committee modify its recommendations in the interests of harmony. Modification was not effected and the A.M.A. Motor Truck Committee was advised that "the Motor Truck Rating committee is somewhat disappointed that its report was not adopted in its entirety by the A.M.A. and that it hopes that trial use of the rating as recommended by the S.A.E. Rating Committee will lead to its eventual adoption in full."

Adoption by the industry of a uniform method of stating truck capacity ratings, with the emphasis on gross vehicle weight, is expected to be useful in a number of respects. First and foremost is the hope that it will promote an acceleration of the trend in recent years toward the adoption by states of gross vehicle weight as a truck licensing basis. The industry views gross vehicle weight as being the fair way to license because of its more direct relationship to the vehicles as it operates on the road. The present licensing situation is chaotic. Of 49 licensing authorities (D. of C. included), 19 now use gross vehicle weight as the basis; 16 use manufacturer's tonnage rating; 12 use net weight of the vehicle, and 2 use chassis weight.

Uniformity is also expected to be of help:

1. To truck users in the selection of vehicles and in the keeping of costs;
2. To insurance writers and actuaries in setting up insurance rates on an equitable basis;
3. To employers and labor unions in determining drivers' rates of pay on a basis that will not penalize particular types of vehicles;
4. To states in the framing of regulations, assessment of fees and

(TURN TO PAGE 72, PLEASE)



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See your T. P. Jobber!

THE SERVICE BIBLE
OF THE
MAINTENANCE
TRADES!



Thompson Products

(CONTINUED FROM PAGE 70)
taxes, and in the recording of statistics.

(For a further discussion of the Capacity Rating subject see the Editorial on page 18.)

Roster of SAE Motor Truck Rating Committee

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B. B. Bachman, The Autocar Co.
J. Black, Trailer Co. of America.
C. J. Bock, Yellow Truck & Coach.
L. R. Buckendale, Timken-Detroit Axle Co.

Robert Cass, White Motor Co.
F. L. Faulkner, Armour & Co.
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R. B. Wuerfel, Chevrolet Division, GMC.
Donald Blanchard, secretary, S.A.E.

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ENGINE BEARINGS

(CONTINUED FROM PAGE 25)

sq. in. Copper lead is good for more than 1800 lb. per sq. in. with the top recommended limit for this material somewhat higher than 3850 lb.

There is more to it than the correct lb. per sq. in. The bearing engineers have developed a formula — in

P

which the Z is the absolute viscosity of the oil, N is the number of revolutions per minute and P is the pressure per sq. in. Worked out this way the competitive tin base babbitt is permitted a minimum value of 20, while the quality tin base babbitt goes lower to 15. High lead babbitt has a minimum of 10, and cadmium silver and copper lead are rated at 3.75.

If the material the bearing engineer has in mind for a certain engine survives these two specifications he tries it for maximum P times maximum V which, translated into understandable language, means maximum pressure per sq. in. times the maximum rubbing velocity in ft. per second. Top value in this for the competitive tin base babbitt is 35,000, with quality tin base babbitt going up to 42,500. High lead babbitt rates 40,000, and cadmium silver and copper lead are adaptable to 90,000 and upwards.

Next, the bearing engineer before recommending bearings for equipment on an engine wants to know something about the temperature of the oil in the oil pan. The two tin base babbitts will be satisfactory providing the oil temperature does not go above 235 deg., but it must be 10 deg. lower for the high lead babbitt. Cadmium silver and copper lead will stand 260 deg. without trouble. No one cares much about the hardness of the crankshaft within reasonable limits unless cadmium silver is under

(TURN TO PAGE 74, PLEASE)

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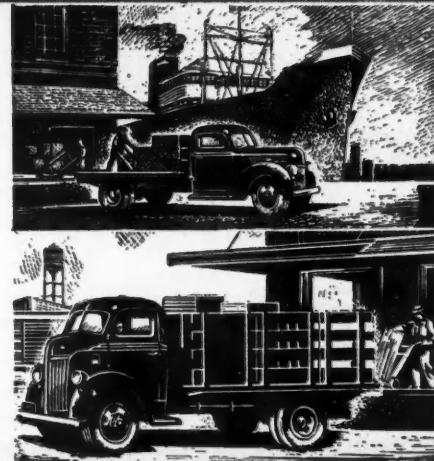
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FORD
TRUCKS
AND COMMERCIAL CARS

(CONTINUED FROM PAGE 72)
consideration and then it must be 250 Brinell, while in the case of copper lead bearings it must be 300 Brinell.

None of the babbitts is subject to corrosion, and the bearing manufacturers feel that corrosion is not likely to bother the others provided the oil temperature is kept below that previously specified, and the proper oil has been selected. However, the possibility of corrosion must be considered.

Needless to say it is not always possible to keep the temperature of the oil where it belongs, and then corrosion of the bearing becomes a serious matter. To prevent corrosion of cadmium silver and copper lead bearings, which are the types used in the most severe service, they are sometimes treated with Indium about which relatively little is known since it has only recently been used for this purpose.

Indium is a very soft silvery metal with a specific gravity of 7.28, which

is found in zinc ore. Its possibilities are still being explored in many fields and some engineers are enthusiastic about the protection it affords engine bearings. It is applied by electroplating and then given a heat treatment which causes the Indium to infiltrate deeply into the bearing metal.

Thus, following these rules, the bearing engineer decides which material should be used in an engine. This should give you a pretty good idea of why there is such a variety of bearing materials. If this brings a question to your mind concerning the possibility of one material being adequate while another would be more than adequate thus giving longer life, the answer is "yes." If you are disposed to wonder why the more-than-adequate bearing material was not used in your truck your question must be answered by asking you one. Why didn't you buy a more expensive truck? The truck engineer did exactly what you did. He bought what he considered best for the money. His money is not any more unlimited than is yours.

Before leaving the subject of bearing materials it is only fair to warn you that while we have used five arbitrary classes of bearings, these five classes do not completely cover the field except in a general way. The tin base babbitt, the high lead babbitt, the cadmium silver and the copper lead bearings may be varied in the proportions of ingredients and the variation will affect the characteristics to some degree. One of the largest bearing companies considers that it has 11 types of bearings.

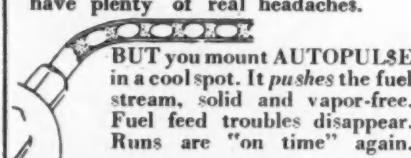
As a maintenance man you may feel that the disappearance of the shim has increased your cost since it is no longer possible to adjust bearings with the result that they must be discarded more often. You may not realize it but the bearing shims were more valuable to the engine manufacturer than they ever were to the maintenance man. When shims were used the manufacturer could get away with crankcases that were not nearly so accurate as they have to be today. He simply used shims to take up the inaccuracies. You can rest assured that the manufacturer did not give up shims unless there was some reason for it.

The reason for abandoning the shim type bearing is that bearing
(TURN TO PAGE 76, PLEASE)



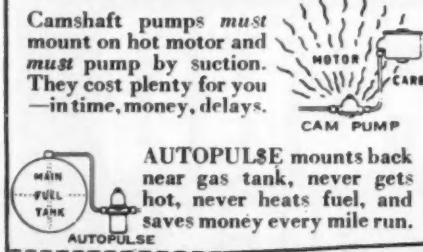
CUT OUT VAPOR LOCK

Engine-mounted pumps get hot. This and suction-pumping cause vapor lock and men responsible have plenty of real headaches.



PU\$HER NOT SUCKER

Camshaft pumps must mount on hot motor and must pump by suction. They cost plenty for you—in time, money, delays.



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Besides vapor-locking, hot camshaft pumps also cause 10% of highest-test fuel-ends to boil off and vent out carburetor.



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Stop waste today! Why let LOSS continue? Get rid of trouble. Many A-1 operators have done so with AUTOPULSE. Have your jobber tell you of our change-over plan, or write direct.

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Your Eye Will Tell You:
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Compare Tyson Cageless with any conventional cage-type bearing of the same size (and same part number). Note Tyson's extra load-carrying rolls—made possible by eliminating the spacing-cage. You can see that Tyson Cageless is a better bearing for every heavy-duty job, where going's toughest. Tie in with Tyson today.

Cageless FOR HARD SERVICE

Cage-type FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

(CONTINUED FROM PAGE 74)
loads and speeds have increased to a point that demands more accurate bearings. Modern bearings are manufactured within tolerances of $\frac{1}{4}$ of .001 in. The increased loads and speeds have made necessary lubrication systems that deliver oil of given quantities at given rates within close limits. And the bearing and its clearance is a very important part of the lubrication system.

Bearings must now be fitted with a specified clearance and with no

other. This clearance must obtain right from the start. If it does not the bearings may encounter sudden failure, which is fortunate in that the maintenance man can immediately determine that something is wrong and correct it, or the bearings may simply give a much shorter life than they were intended to give. This latter is much more insidious because the bearings do not give satisfactory life and it is seldom that the real cause of the trouble is ever determined.

Recommended Clearances For Babbitt Bearings

(For cadmium-silver and copper-lead bearings add .001 in.)

Diameter of Crankshaft Journal or Crankpin	Recommended Oil Clearance
2 in. to $2\frac{3}{4}$ in.	.0015
$2\frac{3}{16}$ in. to $3\frac{1}{2}$ in.	.0025
$3\frac{3}{16}$ in. to $3\frac{3}{4}$ in.	.003
$3\frac{7}{8}$ in.	.0035
4 in.	.004

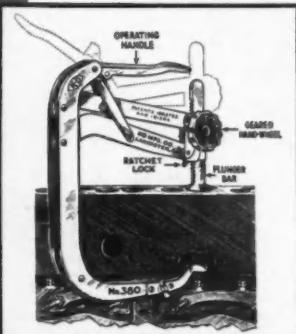
With shims it is possible to adjust bearings to a specified clearance under certain conditions but even then it is a long and tedious process. More often than not such adjustment does not result in the correct clearance and since this clearance is vital, a predetermined clearance with bearings precision-made for this clearance is desirable. With labor rates what they are and the amount of time a good mechanic could spend fussing with bearings adjustment it is probable that the fleet saves money on the repair operation by replacing bearings rather than attempting to refit a worn bearing.

Another mechanical difficulty encountered with the use of shims is the distortion of the shim and the possible distortion of the bearing. The bearing is in two equal halves. When the connecting rod is forged the big end is sawed in half. Since the effective length of the connecting rod is held to very close specifications, it is possible that in machining to length the upper half of the bearing saddle and the lower half of the bearing saddle, when finished, are not equal halves. Thus the matching surfaces of the bearing would not register with the matching surfaces of the rod. Thus the shim would be distorted, which would affect its thickness, and the bearing might be distorted.

The modern bearing linings are thinner because it has been found that this results in increased mileage. However this thinness probably dare not be carried to extremes, as one of the highly desirable features in a bearing lining is ability to embed certain metallic particles brought into the bearing by the lubricating oil. Excessively thin linings will reduce this ability and partially imbedded metallic particles may cut and score the crankshaft to the point of destruction.

Most important to the fleet oper-

Get to know the versatile K-D LIFTER FAMILY



K-D 380 Compressor. For valve-in-head and L-head. Automatic depth adjustment with hand wheel and over-center cam locking operating handle makes this the fastest, surest lifter of its kind. Two sets jaws.

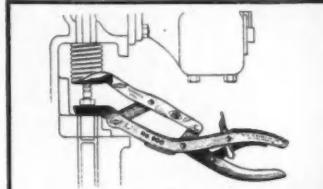


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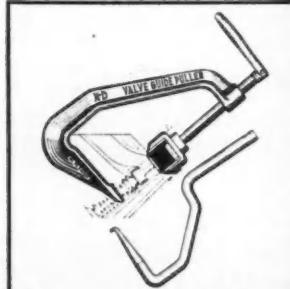


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Most Jobbers carry a complete stock of K-D Tools and will be glad to demonstrate any of them to you. If you would like a new K-D Catalog, write direct to the factory.

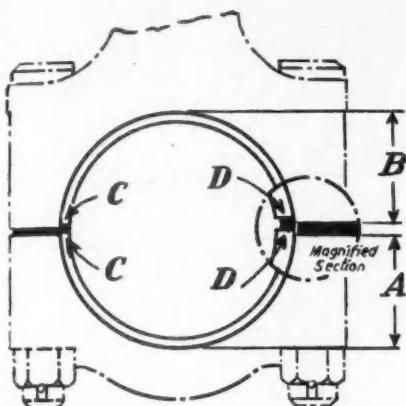


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Ford Guide Puller Sets. No. 920 Set for Ford 85 HP, Mercury & Zephyr. No. 860 Set for Ford 60 HP. Powerful drop forged Pullers get under guides and pull straight up. Drivers to quickly remove retainers. No guides ever stuck too tight.

K-D MANUFACTURING CO., LANCASTER, PA., U.S.A.



A & B may not be equal causing misalignment of parting surfaces at C & D

ator is what he can do to insure a full life from the bearings in his trucks and what he can do to improve the process of replacement. In this respect the bearing engineers feel that while bearings have been improved, the fleet operator's responsibility in obtaining full life from standard equipment and replacement bearings has not diminished. The technique has changed somewhat but do not be misled by the careless term "slip in" into believing that bearings do not have to be handled by understanding hands.

One of the first recommendations by bearing manufacturers is to exercise all the control possible in the physical handling of the trucks. If failures are consistently on the lower half of the connecting rods and on the upper half of the mains, the failures are caused by the inertia loads—that is, the load on the bearing created by reversing the direction of the piston travel from up to down between the exhaust and intake stroke. This load climbs with speed, therefore overspeeding is indicated. If the upper half of the connecting rods and the lower half of the main bearings fail consistently it is the result of explosion pressures. Too much lagging at low speed with wide open throttle will do it.

Change lubricating oil at 500 miles and again at 1000 miles and then go to the regular schedule whatever that may be on either a new truck or one in which bearings have been replaced. This is especially important if copper lead or cadmium silver bearings are used.

Use only such lubricating oils in engines that have copper lead or cadmium silver bearings as are speci-

cally recommended by their manufacturers for use with these types of bearings. This is no hardship as practically all automotive oils regularly marketed by reputable manufacturers now fall within this category. The point should be carefully checked, however.

Keep the oil clean. This means the oil filter and air cleaner must be efficiently maintained. Modern bearings, having thinner linings, will not handle as much foreign material imbedded in the bearing liner, therefore

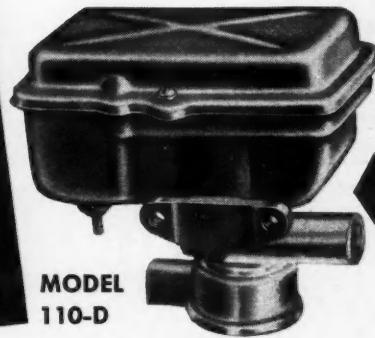
clean oil is more important than ever.

Of the new bearings it should be said that while they will not stand as much foreign material as the old ones, the amount they handle is done with less damage to oil clearance. When a particle becomes imbedded in the bearing liner, it does not just sink in without causing a ripple. Bearing material is displaced and it rises up around the imbedded particle interfering with the oil clearance. Since the bearing mate-

(TURN TO NEXT PAGE, PLEASE)

END VAPOR-LOCK TROUBLE with this dependable, fool-proof STEWART-WARNER Electric Fuel Pump!

Delivers up to 15 gallons
per hour on less
than 1 ampere of current!
No piston!
No rotating motion!
Minimum wear!
Maximum life!



MODEL
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VAPOR-LOCKS cause delays. Delays cost money. That's why so many fleet owners are putting an end to vapor-lock trouble by installing the new, economical, dependable Stewart-Warner Electric Fuel Pump!

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STEWART-WARNER CORPORATION
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1876 Diversey Parkway, Chicago, Ill.
Please send complete facts about the new Stewart-Warner Electric Fuel Pump for trucks.

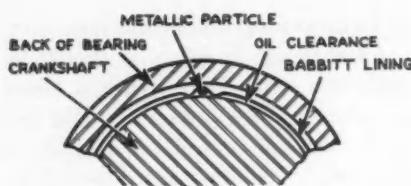
Name

Address

City

State

Firm Name



Babbitt material displaced by particle greatly reduces the oil clearance

(CONTINUED FROM PAGE 76)

rial is thinner the particle will not sink so far into it and there will be less volume of raised material and naturally less interference with the clearance.

Check the oil temperature and if it is above the safe limits given earlier, install an oil cooler.

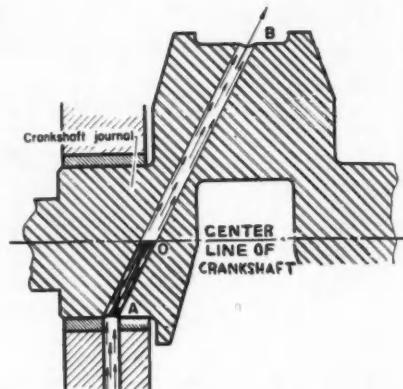
Keep the oil pressure up to specifications. If you have to err do it on the high side. It will not hurt anything. If the engine is permitted to operate with low oil pressure it may cause a sudden failure. In any event it will shorten the life of the bearings.

A slight drop in oil pressure may not seem important to some mechanics but when you stop to consider that there is a certain amount

of back pressure in the oiling system that does not drop when the pressure does, the oil pressure becomes more critical. Connecting rods are supplied with oil from feed grooves in the main bearings through an oil way drilled through the crankshaft. Centrifugal force caused by the crankshaft revolving tends to throw the oil in the drilled crankshaft oilway both ways from the center of the crankshaft journal. Thus the oil in the oilway from the center of the crankshaft journal to the entry hole is forced backwards and this may provide as much as 10 lb. back pressure which the pressure in the main bearing feed grooves must overcome to force oil through the oilway to the connecting rod.

In replacing bearings make sure that the proper bearing to suit the severity of the operating conditions is used. In some cases there is an option. In others not.

Make sure the work and immediate surroundings are clean. Many bearings are ruined by abrasives from valve grinding and cylinder reconditioning. Others have



Back pressure created by rotation of crankshaft reduces the effective oil pressure at connecting rod bearing

their lives shortened by plain dirt.

Make sure the new bearings have the correct clearance.

Make sure that the saddle bore is round. It may be distorted from some form of abuse or other. A tool for this purpose is illustrated on page 25. If it is not round it becomes necessary to fit an undersize or semi finished bearing and bore it to size.

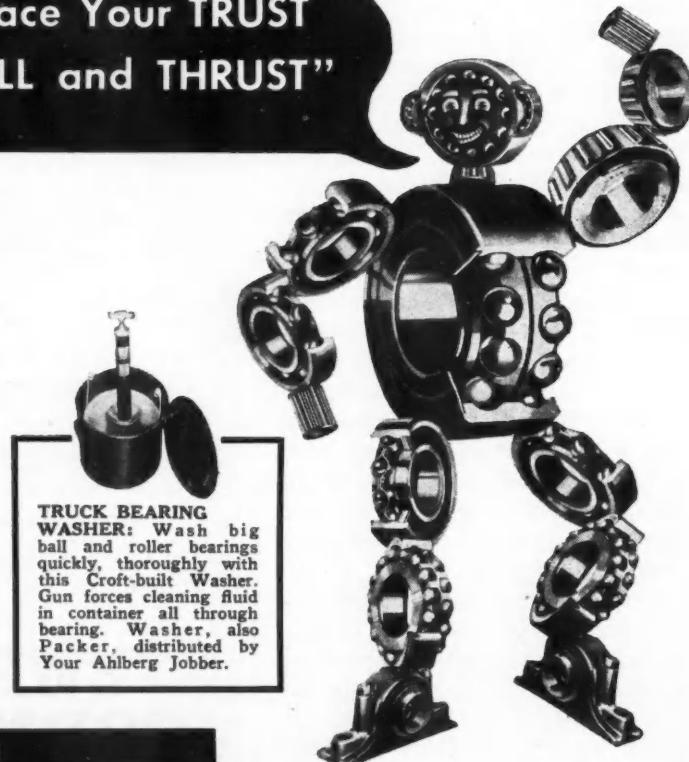
Make sure that there is no misalignment of the parting surfaces of

(TURN TO PAGE 80, PLEASE)

"In Your Ahlberg Jobber Place Your TRUST For Bearings—ROLLER, BALL and THRUST"

YOUR Ahlberg Jobber can help you keep down the bearing replacement costs of your fleet—through complete and convenient "All-Bearing" service. It includes **CJB** Master Ball Bearings, Bower Tapered Roller Bearings (famed for "Super-Finish"—no run-in), and Thrust Bearings. And it is backed up by the 31 Ahlberg Warehouse Branches in strategic centers.

Here's a bearing service especially for you: it saves time and effort and assures correct replacement—gives you every ball, roller or thrust bearing you need *when you need it*. Try it. Write us for your Ahlberg Jobber's name.



TRUCK BEARING WASHER: Wash big ball and roller bearings quickly, thoroughly with this Croft-built Washer. Gun forces cleaning fluid in container all through bearing. Washer, also Packer, distributed by Your Ahlberg Jobber.



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Raybestos

AMERICA'S BIGGEST SELLING
BRAKE LINING

"YOUR 2 BEST FRIENDS for HIGHWAY SAFETY"



(CONTINUED FROM PAGE 78)

the connecting rod and cap. Using a socket on the connecting rod nut that bears against the cap may cause misalignment.

Use a tension wrench on every bearing operation.

Test all bearing installations with oil pressure tester.

Regarding the future of bearing design, one prominent bearing engineer had this to say:

"In the first place, there is much misinformation and lack of techni-



An old and weakened bolt let go; caused this havoc in an otherwise perfect engine. Remedy: New bolts at overhaul

cal knowledge which must be straightened out by education and

training. One of the very important points involved is the rather general belief that the success or failure of a bearing is its particular chemical analysis. With typically American impatience, we flit from one type of bearing or bearing material to another, with a wish and a hope that by the use of some magic formula or trick perfumery, all bearing troubles will be eliminated. This idea has been fostered by misleading advertising and trick sales patter to a point where it is forgotten that patient research and investigation of all phases of the problem are bound to offer more rewards than a swipe at this and a swipe at that.

"Our use of available engine bearing materials has not been any too intelligent and the continuation of late engineering practice involving better selection of bearing materials to exactly suit the individual engine and advanced methods of fabricating these materials into bearings offers an immediate means of improvement. Along with this goes improvements in details of bearing lubrication; distribution of lubricant within the bearing and this means sensible grooving systems (among other things) which directs the oil where it should go and must go, if known principles of lubrication are to be maintained.

"New bearing metals or combinations of bearings materials are constantly being developed. In certain heavy-duty aircraft engines, bearings made of silver lead and indium are being used. An alloy of aluminum and tin shows considerable promise for heavy-duty work. Copper-lead bearings made from powdered metals securely sintered to a steel back have interesting possibilities. An improved bronze back bearing has eliminated certain faults inherent in this type of bearing."

END

(Please resume your reading on p. 26)

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FLEX-FIT 3 WAY TRUCK
AND BUS LIGHT

Flexible . . . fits all curved and flat surfaces. All contact strips and body vulcanized into one inseparable unit. Water-proof. All Rubber. Shockproof. List Price \$2.50

SAFETY

LIGHTS

HOBBY REFLEX
SIGNAL

For trucks, busses and trailers. Lens molded in one piece, cannot come loose or get out of focus. Heavy metal frame. Withstands severe abuse. List Price \$1.00



STURDI-BILT MIRRORS
Heavy rubber bumper guard absorbs shocks and reduces possible damage to mirror. Complete with clearance lamp and hinge mounting adjustable to any position. List Price \$3.25

AND

EQUIPMENT



DO-RAY
LAMP COMPANY

1458 S. MICHIGAN AVE. - CHICAGO

SAFETY LIGHTING AND REFLECTING EQUIPMENT



JINXED BY A JACK?

Picture yourself in this fix! Wasted hours, damaged load, repair bills, costly overtime, lost contracts—all because a jack failed. You can't afford to have this happen, and it won't if you have dependable, "service-proved" jacks.

BLACKHAWKS NEVER LET YOU DOWN

In Blackhawk Hydraulics you get jacks that are big, tough and plenty powerful. Lift load and all—and keep 'em UP! They are the *only* jacks that carry the Service-Proved Seal, your assurance of more-for-your-money value.

DON'T TAKE CHANCES

The profitable on-schedule operation of your rolling-stock demands the quality, safety and dependability that are engineered into Blackhawk Hydraulic Jacks. Check your present equipment—and play safe with Blackhawks. Your jobber salesman will help you select the proper models according to loads, tire sizes and axle heights.

A Product of **BLACKHAWK MFG. CO.**
Dept. J1131 **MILWAUKEE, WISCONSIN**



BLACKHAWK

A WAY TO WEIGH REPLACEMENTS

(CONTINUED FROM PAGE 35)

from his records not only the repair costs but the cost of gasoline, oil and tires. Since the costs represented by these curves are the cost of cars scattered all over the eastern seaboard, and since the cars are typical fleet cars, the curves themselves may have some value for other fleets in determining when to replace cars. In any event, any fleet that has accurate

records can compile its own curve.

Decision to replace or not to replace is almost always made when a car needs important repairs. For this reason it may be best to decide first if the cost of the repairs is justified on the basis of experience. To determine this, estimate the cost of the repairs needed and add to it the cost of all repairs to date, taken from the car record.

Locate this amount of money on the vertical scale on the left side of the first graph and from this point

draw a horizontal line through the experience curve.

From the mileage record take the mileage of the car to date and add to it the estimated additional mileage made possible by the repair job.

Locate this mileage on the mileage scale at the bottom of the graph and from this point draw a vertical line through the experience curve.

If these lines intersect above the experience curve, the car will cost more than average for repairs and the repair is probably not justified. If they intersect below the experience curve, the cost for repairs at the indicated mileage is below average and therefore should be economical.

For example:

If a car has gone 40,000 miles and \$125 has been spent on it and repairs indicated amount to \$150 and the additional mileage is estimated at 45,000 miles, the total amount of money would be \$275 and the total mileage would be 85,000. The intersection of the horizontal dollar line and the vertical mileage line would be well under the experience curve and therefore the repair job would be justified.

It is possible that a point located by present mileage and amount of money already spent on the car will be far above the experience curve and this should be taken into consideration. It is possible that the proposed repair job and the estimated mileage will locate a point above the experience curve but closer to it than the point located by present mileage and cost. In this event the proposed repair job would bring the car closer to average experience and therefore it would represent a saving.

When, however, the present experience point is located on or below the experience curve and the proposed repair job would bring it above the experience curve, either one of two things should be done. Either the car should be replaced or the amount of the repairs should be reduced with the expectation of shorter mileage before replacement.

The second graph (Fig. 2), shows an experience curve of variable costs comprising repairs, gasoline, oil and tires. This chart is used the same way as the first one. If the total variable cost to date, with the addition of the estimated cost for operating the additional miles made possible by

(TURN TO PAGE 84, PLEASE)



BULLETIN No. 135

for New and Practical

EBERHARD ITEMS

(a) No. 166 ROPE BINDING HOOK — steel — for attachment by screws, bolts, rivets or welding.

(b) No. 4855B—a larger size of a popular Folding Handle. 4 inch length of T handle.

(c) No. 5696 — improved steel case SLIDING DOOR LOCK. No. 5696½—same but with inside locking thumb latch.

(d) No. 575717 — a new "Pedaloc" Seat Pedestal, in two sizes. Foot pedal unlocks to swivel. Tips to pass large baskets or packages.

(e) No. 5604 COMPARTMENT LOCK. For tool compartments of utility trucks, tank body lockers, etc.

(f) No. 565644 LATCH BAR—with Corbin key locking handle. Simply push plunger to lock. No. 5635—same as above but with loop for padlock.

(g) No. 5612 LOCK HANDLE—without escutcheon. For easy attachment to thin metal doors.

(h) No. 565693—Improved SLAMTITE LOCK. More easily and quickly installed.

(i) No. 5613 — SLAM ACTION LOCK—for thin metal doors of utility trucks, gasoline trucks, etc.

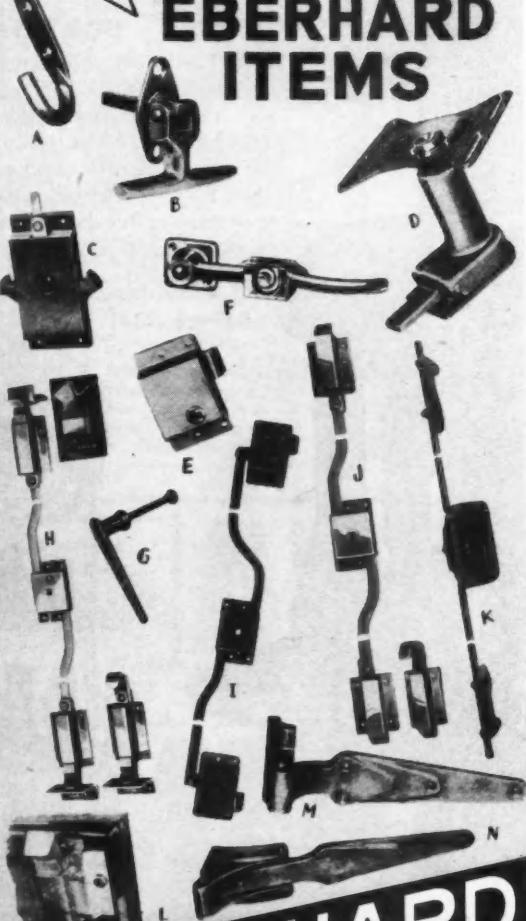
(j) No. 565699 SLAM ACTION LOCK with improved center case that simplifies and speeds installation.

(k) No. 4856 RECESSED FOLDING HANDLE LOCK for wood or steel doors.

(l-m-n) Especially for Lindsay Structure Bodies.

(k) No. 5614 ADAPTER to install No. 5607 and No. 5609 Eberhard Locks. (l) No. 5862—1½" Round Corner Hinge for "M" type corners.

(m) No. 5863—6" Radius Round Corner Hinge.



EBERHARD
MANUFACTURING CO. 

DIVISION OF
EASTERN MALLEABLE IRON CO.
CLEVELAND, O.

YOU TAKE NO RISKS WHEN WAGNER AIR BRAKES ARE PUT ON YOUR "JOBS.."

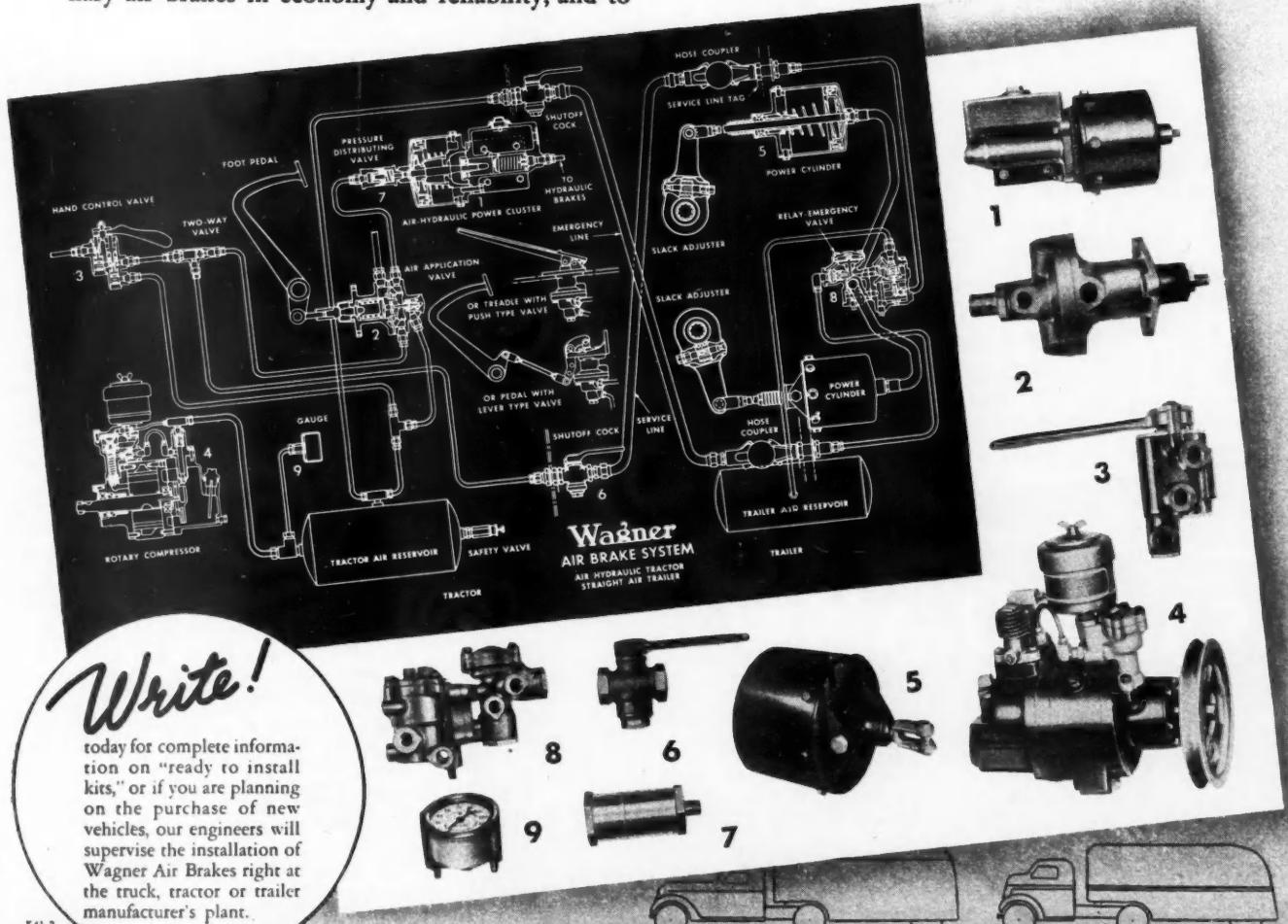
They have added features that assure you "TOP" brake performance

Wagner Air Brakes are a development of the Wagner Electric Corporation, a company with 16 years of experience in the manufacture of Lockheed hydraulic brakes.

Wagner's proven hydraulic brake engineering ability plus its modern factory equipment and outstanding test laboratories have enabled Wagner engineers to produce air brakes far ahead of ordinary air brakes in economy and reliability, and to

produce the phenomenal Wagner Rotary Compressor known for its high efficiency — a natural result of the never-ending research carried on by Wagner in behalf of safer brake performance.

There are three distinct Wagner Air Brake systems, each designed to meet a specific requirement. The schematic installation illustrated is an air-hydraulic tractor with straight air trailer.



K41-2

Wagner Electric Corporation
Manufacturers of Lockheed Hydraulic Brakes
6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.

(CONTINUED FROM PAGE 82)

the proposed repair job, intersects the line representing the mileage to date plus the estimated mileage made possible by the repair job above the experience curve, in all probability the car should be replaced. If it intersects below the curve it may be economical to keep the car.

For example:

If a car has a mileage of 40,000 and has cost a total of \$550 to date for repairs, gasoline, oil and tires and now faces a repair job which,

when added to the cost of operating the additional mileage of 15,000 miles made possible by the repair, it will bring the total to \$860 and the mileage to 55,000 miles. The 55,000-mile vertical line and the \$860 horizontal line will intersect well above the experience curve and therefore the car should be replaced.

Readers may wonder if these charts can be applied to truck replacement. It is possible that they can be modified and used that way but in their present form neither the fleet opera-

tor that developed them nor the editors of COMMERCIAL CAR JOURNAL believe they have any relation to commercial car replacement in their present form.

The economical replacement of vehicles is a highly controversial subject. COMMERCIAL CAR JOURNAL would like to consider for publication any comments readers may have on this method or any ideas they may have for deciding when to replace a fleet vehicle.

END

(Please resume your reading on pg. 36)

American Brakebloc Offers Advisory Service

The American Brakebloc Division of The American Brake Shoe and Foundry Co. is announcing a new program of sales and service for heavy-duty brake materials.

American Brakebloc engineers have completed exhaustive studies of fleet "brake-load" problems in relation to truck and bus weights and loads, speeds and varied operating conditions. The Division has also run comprehensive laboratory and road tests on all types of brake mechanisms now in use, including varied types of manually operated brakes, vacuum-booster brakes and air brakes.

Having measured varying "brake loads" and the varied powers of applications in different brake mechanisms, American Brakebloc engineers developed formulas for brake materials that will handle these pressures with proper frictional abilities. These materials are now generally classified in three groups—regular, the 1000 series, the 2000 series and American Brakebloc Thick Blocks for specialized air-brake use.

In addition, the Division has perfected a Brake Lining Advisory Service which makes the results of its engineers' work in research and testing available to fleet operators generally. This service is offered by NAPA Warehouse men, jobber salesmen, or the main office in Detroit, and is built around an information blank which is to be filled in by operators, giving brief but complete details on their units, loads, speed ranges, operating conditions and routes.

These blanks are carefully analyzed and made the basis for brake material recommendations which are sent to the interested operator by mail.

QUIZ ANSWERS

(See Page 18)

1. c. 2. a.
3. a. (This one may be distasteful if you have it wrong.)
4. a. (A bezel is the groove in which the glass cover of the speedometer is fitted, so you'd find it on the dashboard, of course.)
5. c. 6. b. 7. b. 8. b. 9. b. 10. d.

EDWARDS
WEIGHT-SAVING
CUTS OPERATING COSTS
ADDS TO
PROFIT EARNING

Edwards light-weight trailers are proving real money makers on the road.

Hi-tensile steel construction saves all the deadweight it is practical to save. Lets the trucker add that much more payload. By adhering to tried and proved principles of trailer engineering, Edwards also saves you money when repairs are necessary.

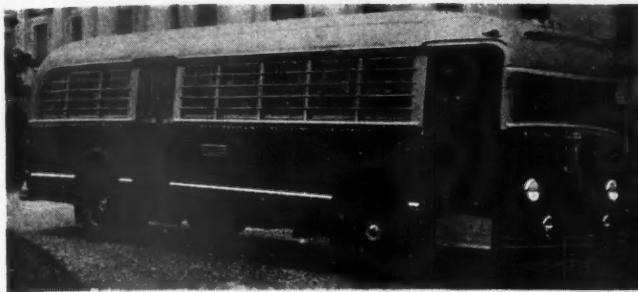
There are 25 other important features, too. Prices are distinctly competitive. Investigate Edwards big trailer values and earning capacities today.

STANDARD

EDWARDS
EDWARDS IRON WORKS, SOUTH BEND, IND.

HI-TENSILE STEEL
SEMI-TRAILERS

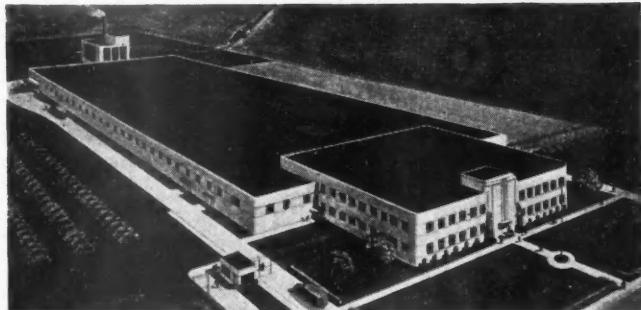
ATTRACTIVE PROPOSITION FOR QUALIFIED DEALERS—WRITE OR WIRE



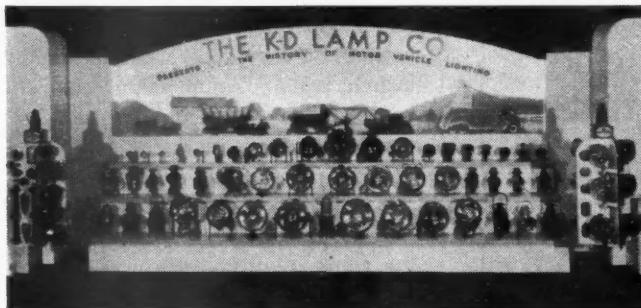
The nation's first highway post office went into service recently on an established route between Washington, D. C., and Harrisonburg, Va. Mounted on a White chassis, it makes the 140-mile round trip daily and contains all the features of a railway post office. Two more routes are soon to be established but details are not announced.



New plant of the Van der Horst Corp. of America at Olean, N. Y., where processing of cylinder walls by "porous chrome" hardening is now under way. The process was developed by Hendrik van der Horst of Holland, who heads the company.



General offices and truck brake manufacturing facilities of the Bendix Automotive Air Brake Co. will be housed in this ultra-modern plant at Elyria, Ohio. Providing 167,000 sq. ft. it has the latest in heating and lighting equipment.



Although the lamps in the center of this unusual display are the latest in lighting equipment, many date back to the turn of the century. The valuable collection was assembled by H. Roy Kerans, president of K-D Lamp Co. and is now on display at the company's plant in Cincinnati.

Every Whiz product gives you the unmatched advantages of the world's oldest and largest manufacturers of automotive chemicals.



New 2-STEP COOLING SYSTEM CONDITIONING Eliminates Reverse Flushing

Two products for the perfect job. Double speed, double ease—all in the colorful twin WHIZ package.

WHIZ RADIATOR CLEANER. Eliminates time, labor and trouble of "reverse flushing." Quickly, thoroughly removes all foreign matter. Restores free, unobstructed flow of water. Does not boil or foam.

WHIZ RUST PREVENTIVE. Mixes perfectly with any anti-freeze or water. Protects against rust, corrosion, overheating. Seals and protects against minor leaks. Will not harm any part of cooling system. . . . Use this 2-step conditioning when you drain anti-freeze.



CAR BEAUTY and MAINTENANCE PRODUCTS

POLISHES • CLEANERS • TOP DRESSINGS • TIRE COATINGS
RADIATOR SPECIALTIES • BRAKE FLUIDS • ENAMELS
SHOCK ABSORBER FLUIDS • GASKET CEMENTS • SOAPS
ABRASIVE COMPOUNDS • SPECIALIZED LUBRICANTS

R. M. HOLLINGSHEAD CORPORATION, CAMDEN, N. J., TORONTO, CAN.
World's Oldest and Largest Manufacturers of Automotive Chemicals

REVERSING SWITCH

(CONTINUED FROM PAGE 31)

other in accordance to the electrical pressure or voltage between the points and the polarity of the particles. The rate and quantity of material transfer varies with different driving conditions, equipment, location of leads, coil, condenser, etc., with respect to each other and with respect to the engine and vehicle frame.

A solution to this problem de-

veloped by Delco-Remy research engineers has been presented in the ignition system incorporated in the 1941 Chevrolet. A polarity reversing switch is mounted on the cranking motor frame and it is linked to the cranking motor shift lever so that it operates each time the cranking motor is used. The reversing switch is connected into the ignition circuit as shown in the wiring diagrams on page 31. The distributor breaker plate is completely insulated from the housing and is electrically con-

nected through an insulated terminal to one of the switch terminals. This connects the stationary contact point to this switch terminal. The breaker lever contact point is connected through the breaker lever spring and the second insulated terminal of the distributor to a second terminal on the reversing switch. The third terminal on the switch is connected to the ignition coil.

The three contactors in the reversing switch are shown in dotted lines in one of their two position. In this position the direction of the current flow through the contact points is as shown by the arrows (assuming the current flows to ground). The stationary point is connected to the coil primary terminal and the breaker lever point is connected to ground—both through the reversing switch.

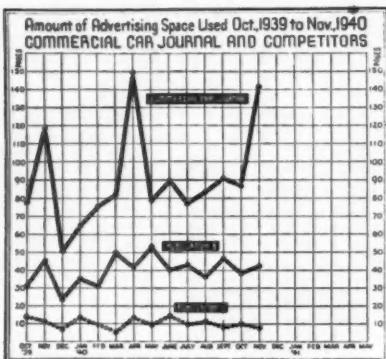
When the cranking motor is operated, the reversing switch is also operated and the contactors in the reversing switch are all shifted around 60 degrees. In this position the stationary point becomes grounded and the breaker lever point becomes connected to the coil primary terminal—again both through the reversing switch. This reverses the direction of current flow through the contact points as shown by the arrows. Consequently, whatever tendency there is for transfer of material to take place is balanced out; whatever may be transferred to one point with the switch in the first position over a period of time transfers back when the switch is in the other position.

The reversing switch will normally require no servicing other than to see that the lead connections and mounting screws are tight. The operation of the switch may be checked as follows:

1. With the engine stopped, turn on the ignition switch. Dash ammeter will indicate ignition load.
2. Slowly depress cranking motor switch pedal. Ammeter needle will return to zero as pedal is partly depressed and the reversing switch begins to operate.
3. Further movement of the cranking motor switch pedal will reclose the ignition circuit through the reversing switch. This will indicate on the dash ammeter.
4. A slight additional movement of the pedal (5 deg. rotation of the reversing switch lever) will cause the

(TURN TO PAGE 90, PLEASE)

COMMERCIAL CAR JOURNAL



Leads in Advertising Volume

The chart, of course, tells the story of COMMERCIAL CAR JOURNAL leadership. Any publication, head and shoulders above the others in its field, has the confidence of the manufacturers in its industry—and is getting results for them.

We started making these charts in 1935. They all look about alike—with COMMERCIAL CAR JOURNAL always out in front. It is the No. 1 Truck Fleet publication, with 30,000 circulation monthly.

COMMERCIAL CAR JOURNAL

A Chilton Publication

Chestnut & 56th Sts.



Philadelphia, Pa.



IT
PAYS 'EM
TO
RAISE 'EM
WITH A
HEIN-WERNER
HYDRAULIC
JACK

**SAVE YOUR FLEET TIME and
MONEY by EQUIPPING NOW**

Take a tip from those who speak from experience—a super-powerful, easy-operating Hein-Werner Hydraulic Jack sure makes it a lot easier for a man to change tires or put on chains.

All under-the-axle H-W Jacks are factory tested at 1½ times rated capacity. They are sturdy, powerful, and amazingly easy to operate.

Complete H-W line includes 1½ ton capacity hydraulic jack at only \$3.15 . . . 2 ton model, \$3.55 . . . 3 ton model, \$7.30 . . . 5 ton, \$9.40 . . . 8 ton, \$12.30 . . . 12 ton, \$18.35 . . . 20 ton, \$30.00. (All prices are net, and slightly higher on West Coast).

Hein-Werner also makes Bumper-Lift Hydraulic Jacks for passenger cars, and a full line of Service Jacks of 1¼, 1½, 2, 3 and 4 tons capacity. Also SAFE-T's (non-adjustable horses) of 5 and 10 tons capacity.

For details and latest prices, ask your H-W jobber, or write us

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Waukesha, Wisconsin

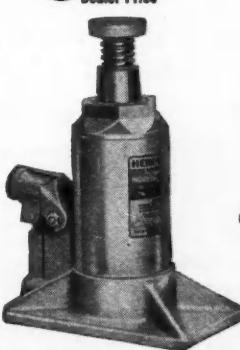
HEIN-WERNER
hydraulic JACKS

Range from
1½ ton model at
\$3 15
up to 20 ton model
at \$30.00

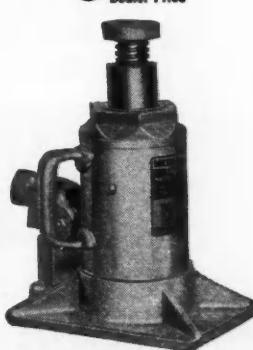


1½ Tons
\$3 15
Dealer Price

5 Tons
\$9 40
Dealer Price



2 Tons
\$3 55
Dealer Price



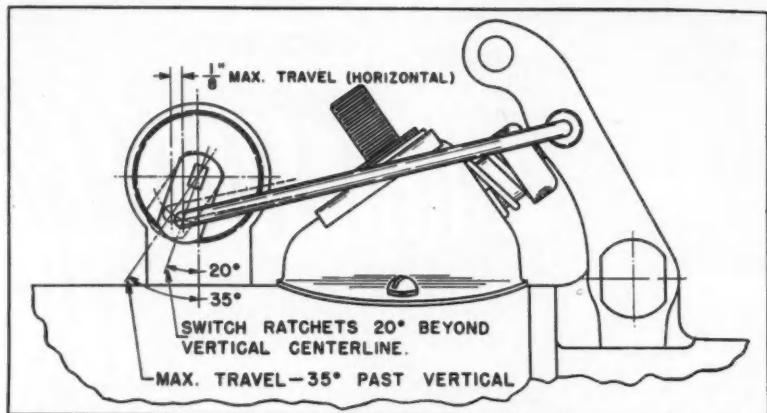
12 Tons
\$18 35
Dealer Price

8 Tons
\$12 30
Dealer Price

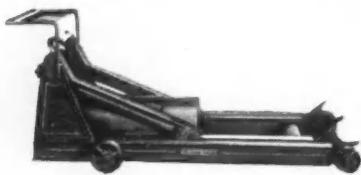
West Coast prices are slightly higher than those shown above

(CONTINUED FROM PAGE 88)
reversing switch to click as the switch ratchets.

5. After the click there must be not more than $\frac{1}{8}$ in. additional travel until the cranking motor switch contacts close and cranking begins. This $\frac{1}{8}$ -in. measurement is taken in a horizontal direction at the reversing switch end of the connecting rod. (See sketch.) The reversing switch lever should never swing past vertical more than 35 deg. when the cranking motor pedal is fully depressed



AN **EXTRA LIFT** IN YOUR SHOP ...AT A FRACTION OF THE COST



give top-notch service. Besides, you can wheel it around the shop anywhere an air hose will reach. Its floodlight illuminates the under side of the car. It takes little air . . . locks on a column of oil at any desired height . . . goes under even low-clearance bumpers. Ask your jobber's representative.

CUSHIONED
AIR COMPRESSORS
CAR LIFTS
CAR WASHERS
PAINT SPRAY GUNS



When writing to advertisers please mention Commercial Car Journal

and cranking is taking place.

If the reversing switch lever has an excessive amount of travel after the click, or if it swings too far around past vertical, the reversing switch may not operate normally and this would prevent starting. Under this condition the connecting rod between the cranking motor shift lever and the reversing switch lever may be shortened by bending it slightly. Avoid excessive bending.

END

(Please resume your reading on p. 32)

FREE BOOKS

(CONTINUED FROM PAGE 17)

stitute of America, Pittsburgh, Pa. Fifty pages; worth while to fleetmen who make a study of materials. Check "E" on the post card.

Welding Equipment

A pocket-sized catalog of Welding and Cutting Equipment is offered by The Imperial Brass Mfg. Co., Chicago. Twenty-eight pages of compact information on the company's complete line. Check "F" on the post card.

Tank Catalog

The Heil Co., Milwaukee, has a new tank catalog ready. More than 100 illustrations, blue-print drawings and dimension sketches, plus comprehensive specifications of all models. Highly recommended for and available only to users of tank equipment. Check "G" on the post card.

Thermostat Catalog

An excellent thermostat catalog complete with specifications and blue-print sketches of every model is offered by The Fulton Sylphon Co., Knoxville, Tenn. Check "H" on the post card.

Plug Troubles and Cures

A pocket-size booklet entitled "Spark Plugs and Engine Performance" is announced by the AC Spark Plug Division of General Motors. It's edited around the theme that "only four things can happen to a spark plug" and tells you what to do about them. Check "I" on the post card.

(Post card opposite Page 122)

PUT MORE MILES BETWEEN OVERHAULS with SUPER-LOY BEARINGS



NEW engine efficiency and maintenance economy can be obtained by using Federal-Mogul Super-Loy Bearings on overhauls. Super-Loy Bearings not only put more mileage between overhauls, they stand up under exceptional operating conditions, withstand high-

temperature operation successfully. And for the shop with a crankshaft problem to lick, Super-Loy Bearings can provide the solution. For complete information on this improved bearing for heavy-duty commercial service, call your Federal-Mogul source of supply.

FEDERAL-MOGUL CORPORATION • DETROIT, MICHIGAN



ENGINE BEARINGS FOR EQUIPMENT—FOR SERVICE • ENGINEERED FOR OIL-CONTROL

REPORT ON ROADS

(CONTINUED FROM PAGE 30)

The note was sharpened momentarily by William Green, president of the American Federation of Labor, who telegraphed a statement urging immediate construction of coastal and transcontinental express highways "to further the program of national preparedness."

"The American people," said Mr. Green, "must give careful attention to highways, for their social and

economic benefits are as great in peacetime efforts as in a time of national emergency. The highways afford one of the strongest lines of defense against invasion. They are a bulwark to national safety. Labor advocates construction of coastal and transcontinental express highways as essential not only to national defense but as a means of providing further employment. We recognize that much remains to be done to meet the normal peacetime need for adequate and efficient high-

ways. Congested areas and industrialized communities need more easily traveled roads. There is need for beltlines and by-passes in these areas and for stronger bridges and wider arterial highways."

Then another national figure soured the theme note when John M. Carmody, administrator of the Federal Works Agency, declared in a statement read in his absence that to meet military and civilian requirements the 75,000-mile network of strategic highways needs to be improved but that "the need has been over-emphasized in recent months."

Said Mr. Carmody: "It is not in the best interests of the nation to demand immediate construction of extensive improvements on strategic network in the guise of national defense — improvements such as express highways through large cities and by-passes around smaller cities and towns. Defense efforts must be concentrated on first things first."

Priority No. 1 in the defense road program, said Mr. Carmody, was 4000 miles of roads and streets vitally needed by the Army and Navy and the defense industries within and approaching reservations and industrial cities. He estimated the cost at \$230,000,000.

"Critical weaknesses in the 75,000-mile strategic system that do need early correction," he said, "are: 4000 miles that are less than 18-ft. wide; 14,000 miles deficient in surface strength; 24,000 bridges that are below standard in strength; 500 additional bridges that do not meet the 18-ft. standard of width or the 12½-ft. standard for clearance or are deficient in both respects."

Despite the several attempts at well-meaning sabotage "Roads for Defense" remained the theme of the convention to which speaker after speaker made lyrical contributions.

E. Donald Sterner, New Jersey State Highway Commissioner, declared that "In view of the strategic position of the North Atlantic seaboard in the preparedness drive, now is the opportune time when public opinion must be aroused and our citizenry must demand the construction of the vitally needed Boston to Washington, D. C., super express highway as part of America's enormous national defense program."

"With the huge step up in indus-
(TURN TO PAGE 94, PLEASE)



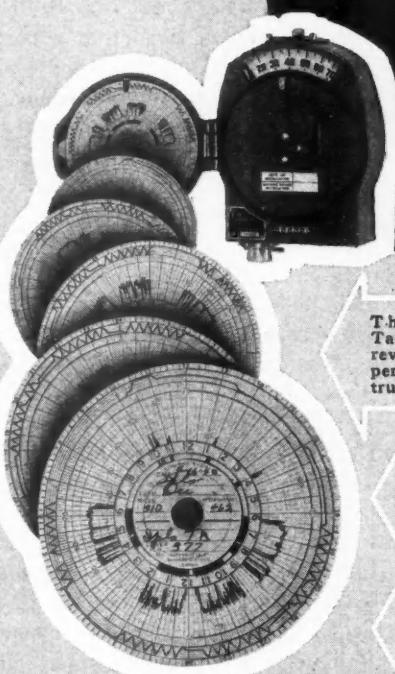
The man in the cab says: "Give me a six-wheeler every time. It's a lot safer. Braking is done in one motion. Can't jack-knife. Easier to handle, too, especially when you're backing up to the loading platform. Doesn't wear you down. Gets through traffic better. And boy, they'll carry some load!"

His boss says: "Six-wheelers have made a big cut in our hauling costs. Carry about twice the payload of a four-wheeler. Save 500 to 2500 pounds deadweight as compared with a tractor-trailer, because they need no fifth wheel and landing gear structure and the frame is not so long. On liability and property damage insurance six-wheelers are as much as 50% lower in rates."

THE TRUCKTOR CORPORATION
156 Wilson Avenue Newark, N. J.

Trucktor

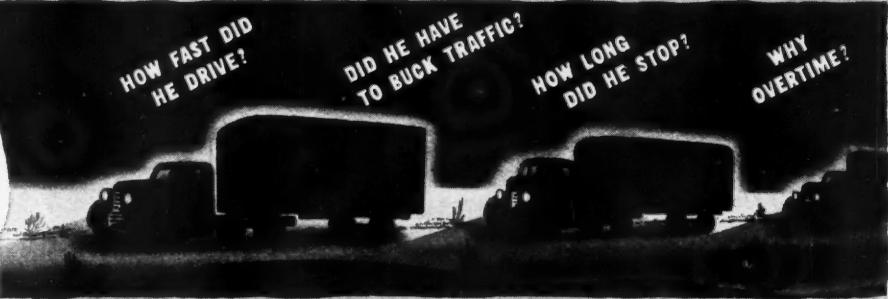
ANNOUNCING a new method of RECORDING the PERFORMANCE of your trucks . . .



The Sangamo Tachograph Chart reveals all facts pertaining to the truck's operation.

Speed, time and distance are graphically recorded.

Provides definite, honest testimony of driver's skill.



SANGAMO TACHOGRAPH SUPPLIES COMPLETE, VITAL FACTS OF YOUR TRUCK'S DAILY WORK!

CONSTANT supervision of your trucks—resultant savings in operating and maintenance costs—greater safety in driving—these are the benefits you obtain with the Sangamo Tachograph. The easily read graphic chart made by the Tachograph provides information more complete and accurate than a dispatcher accompanying the truck could give! Every movement of the truck—when the engine is started, when the truck is moving, how fast it travels, when it stops—all is recorded the very instant it happens. This specific knowledge of the truck's daily performance helps drivers to eliminate: costly driving habits, lost time, large fuel consumption, the necessity for too-frequent repairs, and unusual tire wear and brake replacement. Safer driving is promoted with this instrument. It encourages the practice of steady, unhurried starts and stops, the avoidance of excessive speeds and speed changes. If you operate one or more trucks, by all means investigate this new, money-saving method of truck control.

★ TRUCK KEEPS ITS OWN LOG

The Sangamo Tachograph provides a daily log in the form of a graphic chart. The chart records: speed in miles per hour; miles traveled over a certain period; idling of engine; motion of truck. Tachograph mounts on instrument panel and is connected to original speedometer cable.

SEND FOR BOOKLET

The booklet "Savings & Safety" describes the advantages and operation of the Tachograph, showing charts of actual trips and how easily chart is read. Yours without obligation by sending coupon.



AUTOMOTIVE PARTS DIVISION
Wagner Electric Corporation

6400 Plymouth Ave., St. Louis, Mo., U. S. A.

S41-1

Please send a copy of "Savings & Safety"
 Have your nearest branch call on us regarding the Tachograph

Name and Position _____

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SANGAMO ELECTRIC COMPANY
Springfield, Illinois

The Sangamo Tachograph is now distributed exclusively through
WAGNER ELECTRIC CORPORATION
to whom please address all inquiries

(CONTINUED FROM PAGE 92)
trial and armament activities," said Mr. Sterner, "the volume of daily truck, passenger car and bus traffic throughout the East Coast has reached the greatest peak in history. Trucks making daily deliveries, defense industry workers going to and from their places of employment in private autos and buses, and other inter-related traffic, are all combining to put the greatest burden of all times on the streets and highways of the North Atlantic seaboard.

"No ordinary roads will ever relieve the existing hazardous and costly traffic problems in this region. Records prove that the vast majority of the daily cross-state traffic has destinations in the heart of the big industrial and business metropolitan centers.

"The answer, therefore, as the Public Roads Administration stresses, is the construction of multiple lane elevated highways, or viaducts, with frequent access roads, through the main points of conges-

tion, namely the largest cities, and to relieve the existing overcrowded state highways. This super highway in the most heavily congested area would consist of 12 lanes divided into four sets of three lanes each. This would provide six lanes for express traffic and six lanes for commercial traffic."

Based on the preliminary studies and estimates made by the seven states which the express highway would traverse, the total mileage would be 404.8 miles and the estimated cost \$252,992,540.70.

Massachusetts would build a new road 35.6 miles long from Boston to the Connecticut border at a cost of \$11,500,000.

Connecticut would contribute 122 miles to the express highway at a cost of \$60,000,000.

New York would feed traffic into all three Hudson River crossing facilities — Lincoln Tunnel, Hudson Tunnel and George Washington Bridge — over 21 miles of road costing \$26,000,000.

New Jersey's contribution of 91.8 miles costing \$73,000,000 would start at the western terminus of George Washington Bridge, proceed southerly past the western termini of the Lincoln and Hudson Tunnels to Bayonne, cross Newark Bay on a high level bridge and proceed southwesterly on new location to Camden, where it would cross the Camden-Philadelphia Bridge to Pennsylvania.

Pennsylvania would carry the highway through Philadelphia by way of Delaware Ave., Oregon Ave. and Penrose Ave. to the Delaware state line, a 20.4-mile route to cost \$24,492,540.70.

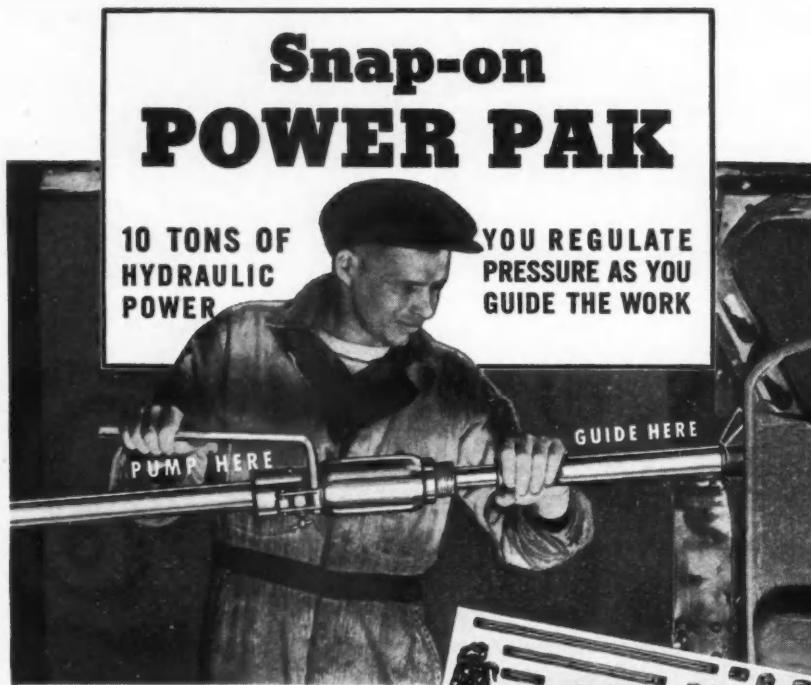
Delaware would add 24 miles at a cost of \$10,000,000.

Maryland would take the express highway to the District of Columbia over 90 miles of highway, costing \$48,000,000, with the Baltimore to District portion on new alignment.

The District of Columbia is said to be ready with finances to carry the highway through the District the moment the entire project gets under way.

The only thing that remains, as Mr. Sterner pointed out, is to arouse the electorate to the necessity of the super express highway and to approval of the expenditures.

That term "expenditures" brought
(TURN TO PAGE 96, PLEASE)



Straighten frames and bodies this fast, one-man way . . .

Here's the speed way, the accurate way, the profitable way to apply hydraulic power in frame and body straightening . . . Snap-on POWER PAK! Hydraulic unit and control handle are right at the point of work, right on the tool itself, where you can regulate pressure as you guide the ram . . . where you can watch what you do as you do it. No running back and forth, no hose, no guessing at results.

You can see for yourself what a money maker POWER PAK can be in any shop, big or little . . . for one man alone can handle any job, turn out more jobs.

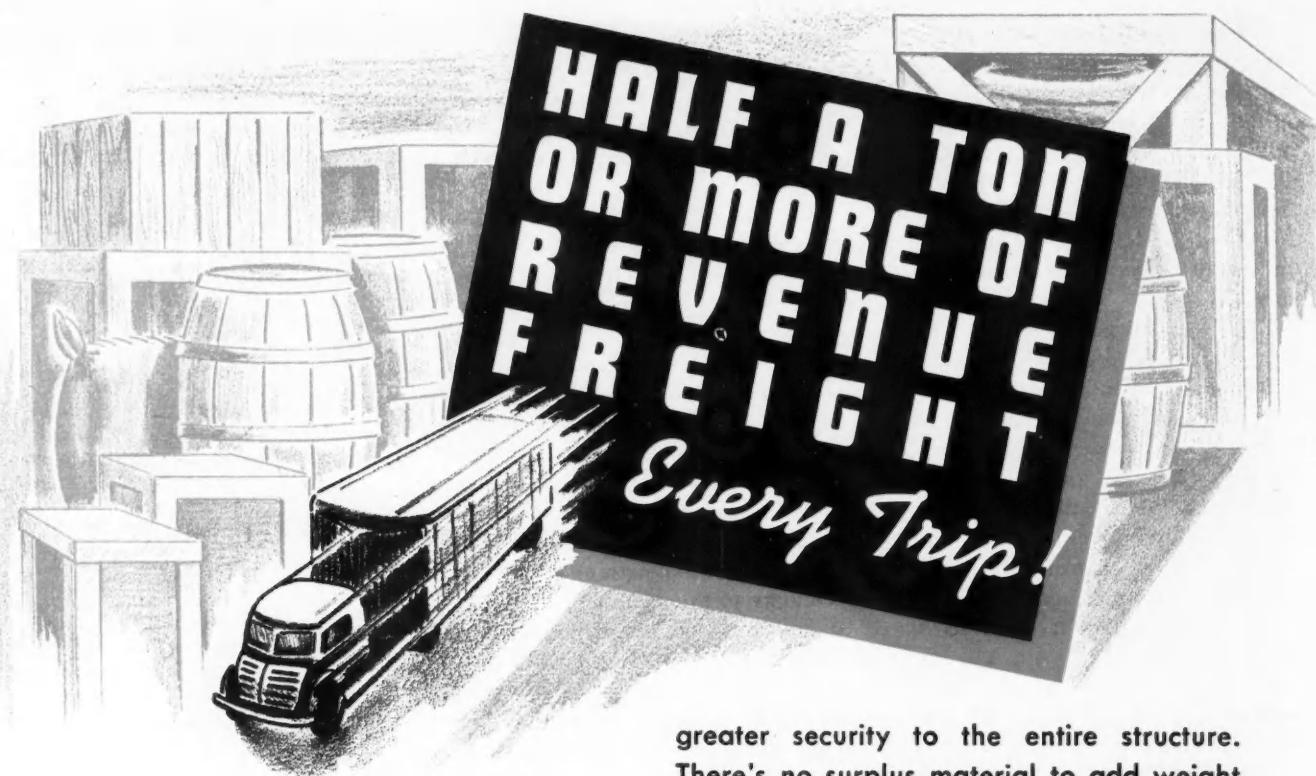
Complete range of accessories gives you POWER PAK service on hundreds of operations while uniform results and handling ease are assured by such POWER PAK features as positive power cut-off (no overriding), automatic retraction, "Kwixtension" with 14 positions and adjustable body spoon with 12 positions. POWER PAK's low cost will surprise you. For complete information and free demonstration see your Snap-on salesman — or write . . .



SNAP-ON TOOLS CORPORATION
Dept. CAJ-3

Kenosha, Wisconsin

Snap-on SERVICE TOOLS
The Choice of Better Mechanics



There's room for extra payload in the Outside Frame Trailmobile. More revenue freight without increasing the total load — without dangerous over-loading — without increasing the king-pin drag that means higher oil and fuel costs.

Trailmobile wins economy-leadership by drastically reducing equipment weight. It carries no unnecessary pounds that prevent a full measure of profits for haulers. This low weight has been attained by the unique shape and form of selected materials. Each part supports its share of the load — lends

greater security to the entire structure. There's no surplus material to add weight only. Not an ounce of lazy metal in the Outside Frame Trailmobile! Because of this distinctive design, the unit is stronger and SAFER than ever before.

Trailmobiles permit more payload and larger earnings — every trip — without increasing the gross weight.

Many successful haulers have found they don't have to pull excess weight — that they can scale down operating costs — that they can increase revenue with the Outside Frame Trailmobile.

Get the facts! Learn how they apply to your operation. Just write or wire the nearest Trailmobile office. Learn how you can haul more for less with the Outside Frame Trailmobile.



TRAILMOBILE

OUTSIDE FRAME TRAILER

THE TRAILER COMPANY OF AMERICA, CINCINNATI, OHIO
Sales and Service Offices in Principal Marketing Centers

(CONTINUED FROM PAGE 94)
disapproval from Hal G. Sours, Ohio director of highways and president of the American Road Builders' Association.

"We should not talk about the building of highways as an expenditure," said Mr. Sours, "but should instead consider them as an investment."

Mr. Sours urged that the financing of defense highways could be considered a definite part of the entire defense program and should, therefore, not rest completely on the shoulders of the individual states. He explained that the Federal government should assume a large share of the burden of expenditures (investments?) for military needs.

Mr. Sours particularly stressed the need for improving trunk-line highways leading to and through large centers of population, with states sharing in the cost, and urged exploration of possibilities of financing express and trunk highways along the lines of the Pennsylvania Turnpike. Referring to the Association's recently created Economics Division, Mr. Sours made the significant state-

ment that "the part highways play in the national economy has not been brought clearly before the public." Educating the public in highway economics will be the function of the Division.

On the subject of economics Miller McClintock, director, Yale University Bureau for Traffic Research, declared that our highway system is extremely inefficient. It represents operating uncertainties, congestion, slowness and hazards. Despite these faults the motor vehicle has resulted in an industry that is the greatest consumer of American commodities and of American labor. "Harm that industry," said Mr. McClintock, "and you have done something to the basic economy of this country. Strengthen it and you add to the nation's welfare."

The industry can be strengthened, the speaker implied, by making highways not only safe but efficient to a degree that will provide vehicle users with the as-yet-unrealized benefits of highway transportation and result in an expanded industry which would be "capable of making a greater contribution in its organized indus-

trial activity to the progress of the nation, to its employment, to its taxable ability and to the peace and security of its people."

"We have in the United States," he declared, "plenty of money in our income at present from traffic to build all that we need of a highway system of this character."

END

(Please resume your reading on p. 31)

The name of the Wolverine-Empire Refining Co., Oil City Pa., has been changed to Wolf's Head Oil Refining Co.

TRUCK PRODUCTION (United States and Canada)

	1940	1939	Per Cent Change
January....	74,016	64,093	+15.8
February....	71,690	63,606	+12.7
March....	75,285	77,107	-2.3
April....	76,807	68,066	+13.0
May....	74,139	63,793	+16.2
June....	67,787	66,964	+1.2
July....	74,005	62,750	+17.9
August....	41,533	40,868	+1.5
September....	56,703	27,560	+106.0
October....	86,104	65,079	+32.5
November....	93,068	73,407	+27.0
December....	98,747	84,260	+17.1
Total....	889,884	757,553	+17.1

SAVE THE MAN IN FRONT
FROM DANGER IN BACK

TRUCK MIRRORS

Reinforced with 3 screws at ball socket
so mirror cannot pull loose

MODEL No. 108

Highest quality extension 5 1/2" EVALAST mirror; heavy duty swivel socket ring; lock collar for heavy duty arm; reinforced tubing at bracket; adjustable bracket; withstands shock and vibration; plain or non-glare.

MODEL No. 109

Heavy gauge tube arm; sturdy construction; extension 15" to 24".

Get catalog No. 40

The K-D LAMP Co.
CINCINNATI, OHIO

Approved FIRE PROTECTION AT THE DRIVER'S FINGER TIPS



BUFFALO "SUPER" Fire Extinguishers are standard equipment for scores of trucks and fleets. Here's fire protection you can depend on—ready at a second's notice for sure, effective action on the most serious blaze. A few easy quick pumping strokes and the fire is smothered. A real highway necessity! Fully approved. Write Dept. N for Folder giving complete details.

BUFFALO FIRE APPLIANCE CORP.
44 Central Ave.

Buffalo, N. Y.

BUFFALO *Built*
Better FIRE EXTINGUISHERS

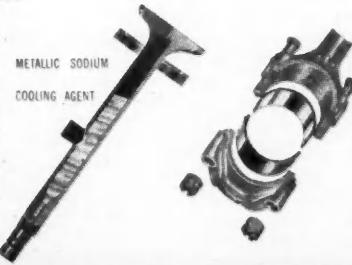


The National Defense Program has made all America conscious of how tremendously the power output of modern aircraft engines has been increased. Engines no larger, and in most cases much lighter, than those of just a year or two ago, have been "stepped up" to unbelievable heights of efficiency.

White set out, more than three years ago, to apply the same advanced engineering principles to motor trucks . . . using many of the same new and stronger metals and alloys that have made modern aviation's progress possible.

SODIUM-COOLED VALVES

—Internally cooled by means of Metallic Sodium —a pure metal which turns to liquid at 210°.—(Standard in all medium and heavy models; available in light at slight extra cost.)



INDIUM TREATED BEARINGS

—Aviation-type copper lead, impregnated as in high power output aviation engines — with Indium. Prevents deterioration due to acid condition in the oil.

The result has been a complete line of White Super Power Trucks . . . trucks so advanced in performance, fuel economy and maintenance saving that they have proved themselves able to earn \$1200 and more per truck per year in some of the country's leading truck fleets.

Find out today what an *Aero-Engineered* White Super Power Truck can do in producing extra money-earning miles for you. Phone your local White Branch or Dealer for a Demonstration or write THE WHITE MOTOR CO., Cleveland, O.



FOR 40 YEARS THE GREATEST NAME IN TRUCKS

LEGISLATIVE LOOKOUT

(CONTINUED FROM PAGE 17)

on caravaning of automobiles in others. Gasoline carriers are under scrutiny especially from the standpoint of capacity and in some cases of Sunday operations. The itinerant merchant is the subject of new taxation and restriction in a number of cases.

Six anti-diversion amendments have been proposed.

Listed by states below are bills already introduced which appear to be of most vital interest to truck operators. Those that have been passed are so indicated.

Arizona

H98 would permit municipalities to regulate intra-city carrier.

S110 would provide 35 ft. length for single unit and 65 ft. length for combination.

H70 would require payment of taxes on fuel brought into the state in fuel tanks of greater capacity than truck manufacturer's specifications.

H73 and S84 would license and regulate itinerant merchants. (Excluded are operators transporting their own dairy or agricultural products and operators transporting goods to or from an established place of business.)

Arkansas

H48 would prohibit a vehicle carrying another vehicle any part of which is above the cab of the carrying vehicle.

H270 taxes and regulates itinerant merchants (details not available).

H329 would prohibit trucks of more than $\frac{1}{2}$ -ton capacity on highways from 12-1 A.M. Sunday to 12-1 A.M. Monday.

California

H440 would require trucks and trailers to have rear bumpers after Jan. 1, 1942. H1043 would repeal 3 per cent tax on carriers.

H1049 would amend diesel fuel tax law (details not available).

H293 would levy a ton-mile tax graduated from .0025c. per mile to .006c. per mile, depending on gross weight. The monthly minimum would be graduated from one to five dollars.

H1085 would tax and regulate itinerant merchants.

H1239 and S835 would prohibit sleeper cabs on intrastate trucks.

H1445 and 1446 would make it permissible instead of mandatory for the railroad commission to fix rates of highway carriers.

H1720 would limit hours on duty of truck drivers to 10 hours a day.

H1427—Would provide separate types of licenses for chauffeurs and truck drivers.

S531 would repeal 45-m.p.h. speed limit and empower highway department to establish speed zones.

S531 would remove all speed limits on state highways except in maximum of 60 m.p.h. at night. Counties and municipalities could fix their own limits.

H1063 would increase maximum load limit on any one axle of two axle vehicle with six tires from 17,000 to 18,000 lb.

Colorado

H298 would tax and regulate itinerant merchants. (Excluded are net loads of less than 3000 lb.; transporters of dairy and agricultural products or newspapers; deliveries being made in conjunction with an established place of business, and goods being transported for the owner's consumption.)

H289 and S585 would provide uniform sizes and weight in accordance with recommendations of the Western Conference of Highway Officials.

H111 would change the registration date to April 1.

H35 is an anti-diversion constitutional amendment.

H731 would amend weight provisions (details not available).

H734 and S1635 would increase permissible weight for four-wheel vehicles to 35,000 lb.

Delaware

S1 would prohibit public use of highways where it is believed that such use would endanger manufacture or transportation of defense materials.

H51 would increase speed limits up to 55 m.p.h. on dual highways and 50 m.p.h. on other state highways.

Georgia

H40 would permit the city of Arlington to levy a license tax not exceeding \$500 on any person or corporation. (This bill has passed the Senate.)

Illinois

H126 would increase fee for trucks up to 10,000 lb. gross weight and reduce fee for heavier trucks.

H91 would require commercial vehicles manufactured after Jan. 1, 1942 to be capable of a speed of 28 m.p.h. on grades of 7 per cent or less.

Idaho

H86 would require fee of $\frac{1}{2}$ c. per gallon of capacity for annual inspection of vehicle fuel tanks.

Indiana

SJK1 is an anti-diversion constitutional amendment.

H221 would provide 13 $\frac{1}{2}$ ft. height, 36 ft. length for single units and 60 ft. length for combinations.

S98 would permit public transportation companies to use police radio receivers in emergency maintenance trucks.

H221 increases height and length provisions and removes 40,000 lb. gross weight limitations. A weight formula of 700 (length plus 40) is substituted.

H281 would repeal the requirement for directional signals on intrastate trucks.

H287 would permit use of solid tires within corporate limits of municipalities.

H418 would impose 3 per cent sales tax and would repeal gross income tax and truck weight tax.

H6 would repeal tire weight tax for commercial vehicles. (This has passed the House.)

Iowa

SJR1 is an anti-diversion constitutional amendment.

H32 would clarify definition of gross weight to mean registered weight of vehicle. (This has passed the House.)

H108 would increase speed limit for vehicles drawing other vehicles from 35 to 45 m.p.h. and speed for trucks from 40 to 45.

H132 would require all semi-trailers to be equipped with sand boxes.

H176 would prohibit car-over-cab operations.

Kansas

Gov. Ratner has said that the trucking industry deserves fair and proper treatment and asks revision of motor carrier laws to "eliminate inequities." He recommended that penalty for failure to pay ton mileage tax be no greater than that for other tax delinquencies.

S30 would provide penalties for failure to pay ton mileage taxes.

H123 would increase gas tax to 4c.

H165 would provide that no action could be brought against carriers for collection of the ton mileage tax unless such action be instituted within five years from date when charges were first assessed.

S168 would repeal the state port of entry law.

Maine

S100 is an anti-diversion constitutional amendment.

S120 would bring truck sizes and weights in line with standard proposed for Northeastern States. It would reduce the single unit length to 35 ft. and increase combinations to 50 ft. Maximum gross weight would be 60,000 lb., axle weight 18,000 lb., and tire weight 800 lb. per inch width of tire.

Heaven Help Us Department

Ohio, H 183 would require a two-man crew on vehicles carrying explosives or more than 50 gal. of gasoline or kerosene.

Penna., H 21 would limit capacity of inflammable fuel truck to 1000 gal. and require the filing of a \$200,000 bond before registration of vehicles. Such vehicles would be prohibited on the highways on Saturdays, Sundays and holidays beyond a distance of 10 miles.

S258 would increase gross weight from 40,000 to 50,000 lb.

S296 would limit permits to contract carriers.

S297 would regulate private carriers hauling goods purchased to avoid carrier law.

S323 would reduce hours on duty of for-hire drivers.

Maryland

H218 would prohibit operation of tractor or truck with more than one gasoline or motor fuel tank after June 1.

H218 would regulate transportation of gasoline and fuel oil.

S98 would amend hours of duty provisions for operators of commercial vehicles.

Massachusetts

H129 would impose an additional 1-cent gas tax to be applied to reducing real estate taxes and to pay old age pensions.

S362 is an anti-diversion constitutional amendment.

H1061 and 1063 would amend weight and equipment provisions (details not available).

H1061 would increase gross weight of semi-trailer units and three-axle vehicles to 45,000 lb.

Michigan

H111 would reduce gas tax from 3 cents to $\frac{1}{2}$ cents.

Minnesota

S164 would require physical examination for driver's license and renewal every two years from Nov. 1.

H353 and S455 would limit gasoline trucks to 3000 gallons except for local delivery. (A 2000-gallon limit was vetoed by the governor two years ago).

Missouri

H53 would provide the means by which truck owners could apply for a heavier weight authorization by paying the difference in charges between his present bracket and the higher one rather than buying a new license.

H21 would prohibit car-over-cab operation.

Montana

H1391 would amend hours of duty regulation for commercial vehicle drivers (details not available).

H1504 would provide additional taxes on commercial vehicles as follows: \$2.50 per 1000 lb. on trucks, trailers and semi-trailers; \$4.00 per 1000 lb. on four-wheeled trailers and \$4.00 per 1000 lb. on diesels. Operations within limits of municipalities or within ten-mile radius would be exempt.

Nebraska

H0 would continue for two more years the present diversion of 1 cent of the gasoline tax to the state assistance fund.

H367 would provide 30,000 lb. gross weight limit for tractor and semi-trailer and 48,000 lb. for other combinations.

H481 would impose ton-mile tax on commercial vehicles in addition to other fees.

H482 would impose 5 cents tax on diesel fuel and require that it be colored.

H13, which would have repealed the "port of entry" law, was killed in committee.

(TURN TO PAGE 100, PLEASE)

"High, wide, and Handsome"

...what's more, this rugged ALL-STEEL body has Tremendous Strength without Extra Weight



Lindsay Structure all-steel body built by Providence Body Co., Providence, R. I. It is mounted on a Dodge COE chassis, Model VM 37.

• Few truck bodies can match this rugged, all-steel unit when it comes to attractive appearance. And few can match it in other respects, either, for it's built under the patented new Lindsay Structure principle that provides extra strength without extra weight. In Lindsay Structure, panel sheets are held in tension between framing members. Thus, the high tensile strength of the sheets contributes to the over-all strength of the entire body. These pre-tensioned panels take the place of crossbraces, gussets, and struts, thereby eliminating all unnecessary weight.

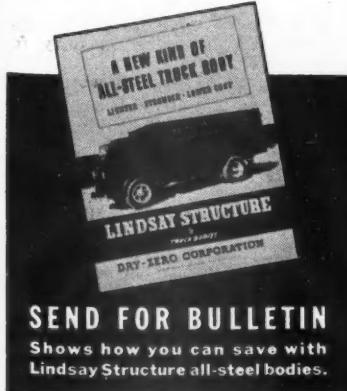
LONG LIFE—Lindsay Structure bodies will not "work" or loosen, even under the severe impacts of heavy

loads and rough roads. Unique socket lock screws hold panel sheets rigidly in place, so that bodies remain tight throughout their entire life.

CUSTOM-BUILT TO ANY SIZE—Bodies can be built of Lindsay Structure in many different styles, to within one-half inch of any desired height, width, or length. They are available with square or round corners, straight or slant backs, or any of these in combination.

EASY TO REPAIR—Because of its patented method of assembly, equivalent to the simplest bolted construction, Lindsay Structure can be easily repaired. In case of accident, damaged panels can be replaced from the outside without disturbing undamaged adjacent sections. Write, Dry-Zero Corporation, 222 North Bank Drive, Chicago; or 60 East 42nd Street, New York.

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SEND FOR BULLETIN
Shows how you can save with
Lindsay Structure all-steel bodies.

LINDSAY STRUCTURE ALL-STEEL Truck and Trailer Bodies

(CONTINUED FROM PAGE 98)

Nevada

Gov. Carville told the legislature that if highway costs are increased by transportation agencies using the highways for private business and pleasure then equity requires adequate compensation to the state for the additional burden.

S14 would increase weight limit on delivery trucks for which a \$5.00 fee is charged from 3000 to 3200 lb. (This has passed the Senate).

S25 would change registration date to May 1.

New Hampshire

H136 would authorize non-resident trucks with carrying capacities over three tons to operate 20 days in any one calendar year under special permit.

H174 would amend length provisions (details not available).

H208 would amend gross weight of vehicles with two axles (details not available).

H208 would increase gross weight of two-axle vehicles from 28,000 to 30,000 lb.

New Mexico

H15 would require trucks to use flares or electric lamps when stopped on highways.

S15 would authorize reduction of truck registration fees after the third year, similar to existing provisions for passenger cars.

HJR7 is an anti-diversion constitutional amendment.

H94 would increase truck license fees and reduce passenger car license fees.

H95 would increase gas tax to 6 cents; diesel fuel tax to 10 cents.

H97 would increase mileage tax on commercial vehicles.

H71 would increase the speed limit to 50 m.p.h. for trucks and place no limit on passenger cars or buses.

New York

S241 and H1 would change registration date to Feb. 1.

S89 would change registration date to April 1.

S382 and H381 would authorize re-examination of operators and chauffeurs and restrictions on use of licenses.

H437 authorizes cities to prohibit use of vehicles painted red or resembling the appearance of fire apparatus.

H705 would require all motor vehicles manufactured after Jan. 1, 1942, to have two reflectors on front of vehicle.

H399 and S362 would continue for another year the so-called emergency third and fourth cent gasoline tax.

H166 would require rear bumpers not over 20 in. above road on all vehicles after July 1, 1941.

North Carolina

S25 would limit trucks and buses to 50 m.p.h. and require governors.

H82 would prohibit the transportation of gasoline or other motor fuels by motor vehicle in excess of 1500 gallons.

North Dakota

H41 would increase size and weight for commercial trucks and exempt army vehicles from restrictions. Bill would increase gross weight of three-axle vehicles to 36,000 lb., 3-axle combinations to 46,000 lb., 4-axle combinations to 54,000 lb., 5-axle combinations to 62,000 lb., and 6-axle combinations to 68,000 lb. Axle weight is increased to 8000 lb. Maximum length for single unit is 35 ft., and for combinations is 60 ft.

S50 would continue the additional 1-cent gas tax. This has passed the Senate.

H165 would provide gross weight of 52,000 lb. and 50-ft. length for combinations. It would impose a basic fee from \$17 for gross weights of 1½ tons or less to \$125 for 20 tons, and \$25 for each additional ton.

New Jersey

H5 would impose an excise tax on persons or corporations other than traction and public utility companies which use public highways by virtue of franchise.

HCR1 is an anti-diversion constitutional amendment.

Ohio

S71 would extend liquid fuel tax to March 31, 1948.

H476 would require two-man crew for commercial trucks (details not available).

H493 would prohibit trucks from Saturday noon to Sunday midnight.

S230 would prohibit double-deck auto transport.

Oregon

S7 would amend size and weight restrictions in accordance with Reno conference of Western Association of State Highway Officials to permit 18,000 lb. axle load, provided the axles are spaced over 18 ft. apart. The formula is increased from 700 to 750 (length plus 40). Maximum gross weight would be 68,000 lb.

H74 would increase ton-mile tax by 1 mill based on combined weight and would eliminate a gross tax on earnings.

H54 would increase the gross vehicle weight classification for truck registrations from 4000 to 4500 lb.

H287 would prohibit heavy trucks and semi-trailers on Sundays and holidays.

S174 would require directional signals.

S199 would limit total length of vehicle to 35 ft.

Oklahoma

S68 would fix 65 m.p.h. daylight speed limit and 55 m.p.h. night limit.

H108 would impose the following mileage tax on trucks: 3000 lb. or less, 3 mills; 3000 to 4000 lb., 4 mills; 4000 to 6000 lb., 5 mills; 6000 to 8000 lb., 6 mills; 9000 to 11,000 lb., 7 mills; 11,000 to 13,000 lb., 8 mills; 13,000 to 15,000 lb., 9 mills; over 15,000 lb., 10 mills.

S98 would amend hours of duty of drivers (details not available).

Pennsylvania

S22 would require a commercial operator's license for anyone receiving pay for driving a motor vehicle. The license would expire annually and the fee would be \$2.00 a year. All new commercial operators would have to be at least 21 years old.

H229 would extend 3 cents gas tax to May 31, 1943.

H366 would provide 65 m.p.h. speed limit on the Pennsylvania Turnpike.

H373 would make owners rather than operators liable for overloading.

South Carolina

H48 would repeal motor vehicle inspection law.

H72 would require dimming of headlights on approaching another vehicle.

South Dakota

S103 would provide 3-cent tax on motor fuel.

H141 would increase the weight limit to allow 16,000 lb. on each axle and 500 lb. per in. of tire width.

S50 provides same limits as H141 and provides a formula of 650 (length plus 40) for calculating gross allowable weight.

H261 would license and regulate itinerant merchants.

H308 would limit capacity of tank trucks for inflammable liquids to 1500 gal.

Texas

S43 would provide a graduated scale for commercial vehicle license fees ranging from 40 cents per cwt. for gross weights of 6000 lb. or less to 70 cents per cwt. for gross weights of 10,000 lb. or more. Brackets above 10,000 lb. would be eliminated and all heavy trucks would pay 70-cent rate.

S35 would exempt private carriers from regulation.

S34 would fix a 40 m.p.h. speed limit for trucks and buses and make an 18 m.p.h. limit in towns.

S1 and H19 would provide a 16,000 lb. axle weight limit and provide a gross weight formula of 700 (length plus 40). In a special message to the legislature Gov. O'Daniel asked for doubling of present 7000 lb. load limit with an emergency clause, but said that he opposed any "scientific" or "fancy" bill and made no reference to S1.

H160 would increase load limit to 14,000 lb. (This is considered as the governor's bill.)

S84 and H24 would increase load limit to 10,000 lbs.

H236 would impose a mileage tax on trucks graduated from 3 mills per mile for trucks with an unladen weight of 3000 lb. to 10 mills per mile for 15,000 lb. unladen weight.

H237 would provide a reduction in the registration fee according to depreciation.

S121 would exempt private carriers from regulation when carrying owner's goods.

Tennessee

S57 would repeal truck mileage tax.

S378 and H471 would levy a tax on diesel fuel (details not available).

S381 and H532 would allow cities to tax motor vehicles for use of streets.

S382 and H533 would allow cities to tax "freight" trucks.

S383 and H531 would allow the City of Memphis to tax motor vehicles and trucks.

H471 and S378 would impose a tax of 7 cents per gallon on any fuel not subject to present gasoline tax.

S483 and H755 would increase gross weight to 36,000 lb. with \$250 as maximum license fee.

H1084 would provide 30,000 lb. gross weight and \$325 license fee for trucks over 24,000 lb. This is administration compromise for S483 and has passed both houses.

H1655 would prohibit trucks being operated between Saturday noon and Sunday midnight.

Utah

S30 would repeal the requirement for sealing registration certificate on side of trailer or semi-trailer.

H71 would prohibit double-deck transportation of motor vehicles. (This bill is reported similar to the West Virginia law.)

S18 would impose 4-cent tax on diesel fuel.

Vermont

H46 would substitute 600 lb. per inch of tire width in lieu of 16,000 lb. axle limits for vehicles weighing over 20,000 lb.

Washington

H25 would provide for state purchase, sale, distribution and production of motor fuel and lubricants.

H53 would add \$5.00 to license fee of trucks using fuel not already taxed. (Passed in House).

H190 would provide for supervision, regulation and price fixing of gasoline as a public utility.

H183 would permit fixing rates of commercial carriers and proper enforcement.

H236 would amend regulation of motor vehicle carriers (details not available).

S173 would limit projection of load to 15 ft. back of rear axle instead of 15 ft. back of truck. Weight limits per axle would be 18,000 lb. Maximum load on two axles 28,000 lb. and on three axles 34,000 lb.

West Virginia

H124 would repeal the car-over-cab law.

H211 would make the 5-cent tax on gasoline permanent.

Wyoming

H15 would require a driver's license law.

H88 would amend hours on duty for drivers of motor vehicles.

H89 would regulate transportation of motor vehicles.

H115 would regulate contract carrier rate.

H75 would increase maximum length to 60 ft., with 45-ft. limit on tractor semi-trailer combinations. The maximum gross weight of 48,000 lb. would be eliminated. Committee recommended "Do not pass."

H79 would limit net load to 10,000 lb. for all trucks operating between points served by railroads and would provide 40,000 lb. maximum for all service not serviced by railroads.

H88 would prohibit sleeper cabs and provide that the 10 hours on duty limit need not be consecutive.

RIO GRANDE VALLEY CITRUS EXCHANGE
GROWER OWNED COOPERATIVE
WESLACO, TEXAS
January 22, 1941

E. I. DuPont de Nemours & Company,
2812-18 Gaston Ave.,
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For the past two or three years we have painted most of our vehicles with your DULUX, and our experience with this material has been indeed satisfactory.

Our equipment operates from coast to coast, delivering citrus fruit and juices of the Rio Grande Valley of Texas. We believe our trucks go through the year with a better finish than they ever did before, and we attribute it principally to DULUX.

Very truly yours

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E. L. PIKE,
Assistant Treasurer

ELP/b

GRAPFUIT-ORANGES

*From the Rio Grande
to the
Great White Way...*

**READ WHY
MR. E. K. PIKE CALLS DULUX**

**"A Better
Finish Than
Ever Before!"**

QUICK FACTS ABOUT DULUX ...

1. It goes on easily and dries quickly to a high gloss that needs no rubbing. *Result: Paint crews finish the job faster... get trucks back on the road sooner.*

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Automotive DULUX
REG. U. S. PAT. OFF.
GIVES MORE MONTHS TO THE GALLON

PURITY PATTERN

(CONTINUED FROM PAGE 23)

road equipment, giving the twelve speeds forward. In both transmissions the main source of trouble lies in the bearings. They are not heavy enough to withstand the hours of pulling in lower gears, particularly the diesel supercharged equipment operating over highways with many grades. With higher torque output the transmissions really get a workout.

Clutch problems are caused for the most part by the frequent shifting of gears in motion, especially on grades, rather than by starting and stopping. The slightest carelessness with the clutch throws a tremendous strain on the entire driving line system, which is multiplied by the trailer. Clutch pilot bearing is a serious problem when one considers the labor cost involved alone in removing a large transmission in a truck to install a several dollar pilot bearing. We have not been able to find a lubricant that

will withstand long service and retain its body and not break down, and as a result have occasional failures at this point. This leads to the thought that a stainless steel pilot bearing would last 100,000 miles or more. The splines on clutch shaft are another problem, as they become worn where the hub rides and cause a great deal of clutch dragging difficulty. Have tried chromium plating as well as stellite facing here. The first apparently made very little difference, and the latter wore out the hub splines quickly.

Differentials of the double reduction type on single axle drives are used. The weakest point in this setup lies in the ring gear shaft thrust bearing, which makes it necessary to inspect every 30,000 to 50,000 miles, by taking out the pinion assembly and trying for side play. The pinion and ring gear teeth are occasionally found with sections broken out also. Worm differentials are used in dual drive vehicles with supercharged motors. They give very little trouble as long as they are lubricated with a good quality lubricant of not heavier than S.A.E. No. 140. We have used castor oil but found it difficult to keep where it belongs. Axle shafts are not broken frequently—most breakage is traceable to a poor clutch or careless driver.

All wheel bearings are readjusted and repacked every seven months, and as a result wheel bearing failures on the road have been reduced to less than one per 100,000 miles.

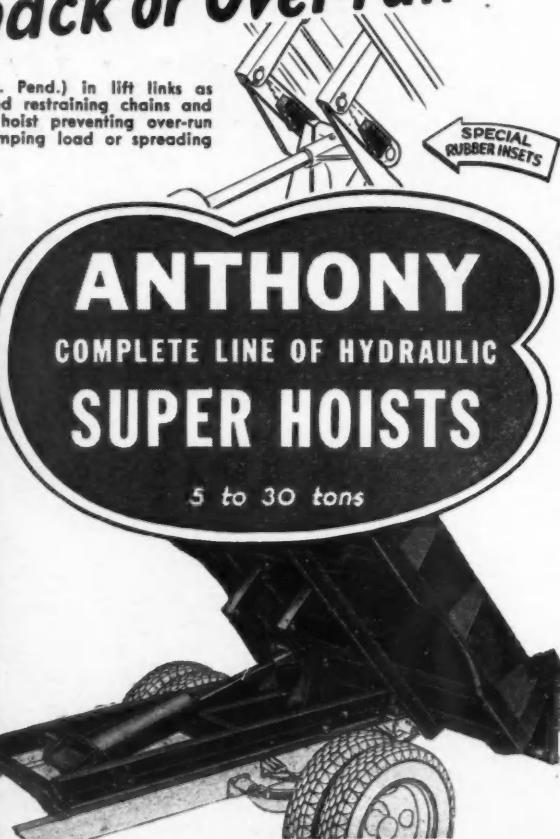
Air brakes are used on all large vehicles. Small and medium size vehicles have hydraulic brakes and boosters. Of course the brakes must be adjusted regularly and kept within the proper limits of brake chamber travel. One cannot give too much attention to the brake problem, for no other factor has so great an influence on safety of operation. Preventive maintenance and proper lubrication are essential for good brake performance.

Hand brakes are another brake problem on this type of equipment. The hand brakes which are available are really of little value, except for parking, and even then regular maintenance is important. There is a real need for a hand brake which will actually stop a vehicle from 25 m.p.h. in a reasonable distance with-

(TURN TO PAGE 115, PLEASE)

"No Kick-back or Over-run"

Special rubber inserts (Pat. Pend.) in lift links as shown replace old fashioned restraining chains and springs. They cushion the hoist preventing over-run and "kick back" when dumping load or spreading gravel.



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Extra Features — Extra Value!

These outstanding features are found only in Anthony Super Hydraulic Hoists . . . Lowest Loading Height . . . Push-Pull Dash Control . . . Double Arm "Power Speed" Lift . . . Rubber Cushioned Discharge (pat. pend.) . . . Arms Lift Vertically to Load . . . Formed Steel Lift Members . . . Telescopic Tipping and subframe . . . Full Tire and Dumping Clearance . . . Pipeless Hydraulic Hoist.

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4 Wheel Drive Trucks

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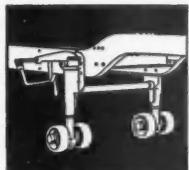
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COMMERCIAL CAR JOURNAL
MARCH, 1941

When writing to advertisers please mention Commercial Car Journal

PURITY PATTERN

(CONTINUED FROM PAGE 106)

out setting fire to the truck. In addition, we use a hook above the foot pedal with which the driver can lock the foot brake in "ON" position when stopping on grades or changing tires. All our brake lining work is done by outside firms. When relining, our experience has been that we must grind the lining to fit the drum for satisfactory results. Consequently, the average brake lining mileage is high. We use nothing but Gunite drums, which have eliminated heat checking due to the extreme heat generated on long applications.

Front axles present some problems. The steering geometry must be right, and our experience has been that many trucks are built without sufficient consideration to this important feature. We have had best results with the front spring shackle at rear only and the steering gear mounted below the frame with a drag link in a straight line to Pitman arm. We have found some steering arms cracked, and since this part is so vitally important we remove the arms as often as possible and check them. Between these inspections and steering mechanism is checked very carefully whenever a vehicle is serviced at 1500 to 1900 miles, and we have found that the contour and tread design of the front tires has considerable effect on steering as well as tire wear on front wheels.

We use adjustable curtains on radiators, as well as thermostats, as other devices have proved unsatisfactory. The curtain with a heavy duty roller has proven more effective and simple to maintain and operate. It is controlled from the cab by a chain, and the driver uses the curtain to keep the water temperature up to 180 degrees at all times. In the northern part of the state we have about 60 days of very cold weather and snow and we use anti-freeze solution in the radiators.

Safety is a watchword in the maintenance of our equipment. Every possible precaution is taken to eliminate the possibility of accidents. We use front springs double wrapped on both ends, lights are tested and set regularly, brakes are tested on

(TURN TO NEXT PAGE, PLEASE)

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Representatives in all Principal Cities of the U. S. and Canada



(CONTINUED FROM PAGE 115)

marked off space which shows feet required to stop at 25 m.p.h., and everything is done to make the equipment safe. Our safety inspection and service is the most important of the operations, and we do not permit any small repairs to be undone. If a cab is not kept tight and properly weather stripped, or the heater is not kept in good condition, it may result in paying compensation to a sick driver. If the head and fog lights are not in the best possible condition, the driver cannot make his schedule. If fuel lines are not kept up on a diesel motor, the slightest air leak may cause a road failure and delay of delivery. In this particular business delay of delivery during the hot weather would mean a great loss, as green produce which has been pre-

cooled would spoil from excessive heat generated in the body while the vehicle is not in motion for a long period of time.

All of the heavy duty vehicles are powered by Cummins supercharged and standard engines. As a result of our long experience with these engines we have adopted standard practices covering their maintenance and operation.

It is in no sense my intention to make any attempt to discount the efficiency of the diesel engine, but rather to present through this article certain facts we have experienced in their operation.

Diesel engines are far more sensitive than butane equipment engines to tune up, or gasoline engines used in the past. One fact we have established is that the Cummins engines

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must be driven within the range of 1300-1700 r.p.m. for successful operation, and water temperature must be kept at 160-180 deg. Lugging results in incomplete combustion, excessive cylinder wear, bearing failure, out of round con-rod journals, stuck rings, excessive deposits of sludge, plugged injectors, and, of course, loss of power. The engine must never be used as a brake at speeds in excess of 1500 r.p.m. We have found this to be very important since diesel engines are sensitive to high speed, and although the engines are provided with a governor in the fuel pump designed to hold them down to 1800 r.p.m. maximum, on down grades the engine is apt to run right through the governor and attain a speed of 2500 r.p.m. if handled by not too careful drivers. Consequently, due to very heavy reciprocating masses within the motor, failure of con-rod bearings, pistons, and in some cases, wrist pins, occurred. We operated these motors at 1650 r.p.m. maximum for quite a number of years and ran up some very fine records for diesel operated motor vehicles. However, one day we woke up to the fact that to stay in business today one has to run like "samhill," and even then many passed you up, so we regoverned all diesel engines to 1800 r.p.m. and raised the average speed from 25 to 32 m.p.h.

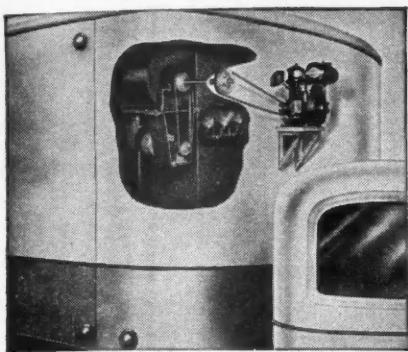
We keep a very accurate motor miles record, trip fuel oil and lubricating oil consumption report, from which we determine minor and major inspection and overhaul periods.

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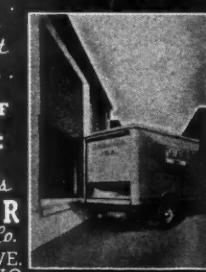
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It Costs No More for Trucks Specially
Built to Fit Your Needs. Have Our
Engineers Visit and Analyze Your Operation.

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Injectors are good for up to 70,000 miles of continuous operation. After that the plunger link and rocker arm button will show wear to a point that it warrants replacement.

In the past exhaust and intake valves were good for 100,000 miles of service without removing from the engine, but now do approximately 35,000 miles and have to be reconditioned or replaced. This is for the most part due to either poor quality of material, or heat treatment. I am speaking here of the valves as supplied by the service agency.

Fuel pumps are good for from 70,000 to 100,000 miles of service, depending considerably on whether lubricating oil or fuel oil is used in the lubrication of governor assembly.

The distributor disc and head must hold a pressure test of at least 500 lb. on a gage. This can be made on fuel pump test stand or with motor running at idling speed. Fuel pump tower shaft bushing is another important part that requires careful analysis and must have a minimum of wear at all times, or else the fuel which travels from the gear pump to the top of meter-plunger will by-pass around the disc drive shaft and cause loss of power, irrespective of what pressure the disc and head will hold. Fuel delivery gear pumps are trouble proof. They have a check valve and a by-pass which occasionally give trouble, but are easily serviceable, and we don't consider this much of a problem. Lubrication gear pumps as a whole present no maintenance problem, outside of the fact that a large volume pump is badly needed, due to the fact that on beyond the 75,000 miles of motor service the oil pressure drops down quite low. This type of a large volume gear pump was tried out here on the coast several years ago and proved its worth.

The lubrication lines and fittings as used on this engine, which are on the outside, present a continuous maintenance and inspection problem. The fittings crack in the threads and the lubrication lines crack at the flare ends, and when this happens on the pressure line it will invariably pump the lubrication oil out of the crankcase. The oil pressure gage requires the driver's vigilant observation.

Air compressors are good for in excess of 300,000 miles, with, of course, new rings and valve service
(TURN TO NEXT PAGE, PLEASE)

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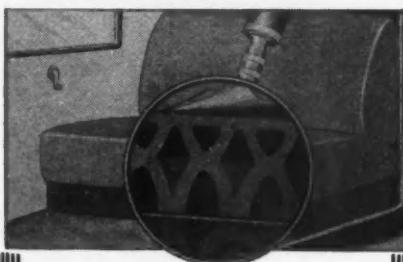
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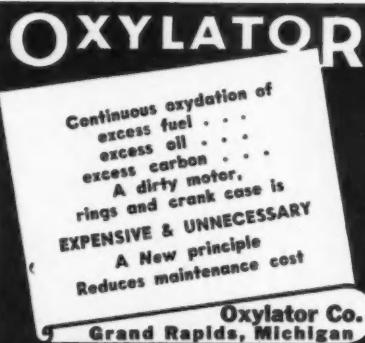


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REPUBLIC STEEL CORPORATION
General Offices - Cleveland, Ohio

(CONTINUED FROM PAGE 117)

after 100,000 miles. This unit is lubricated by oil pressure from the motor and always presents the problem of pumping lubrication oil into the air storage tanks and brake system. This unit should have its own lubricating oil reservoir to eliminate the above trouble. Water pumps present a minor amount of maintenance. The average service life of this unit is about 100,000 miles.

We use additional lubricating oil filter besides the filter bag as incorporated in this motor's crankcase.

Since totally standardizing on the copper-lead con-rod bearings this side presents a small problem. The motors could be run considerably further between inspections if the bearings could be trusted altogether, but such is not the case. The inspection and take-up is necessary on or about 75,000 mile periods, depending considerably on whether external crankcase oil coolers are used. The main bearings are good under average operations for from 100,000 to 300,000 miles of service. The oil cooler is highly recommended for automotive diesel work, especially where many long grades are encountered in the operations.

Cylinder wear, as an average, based on 120,000 motor miles, does not exceed 0.007 in. taper and 0.004 in. out of round, with the exception of number one liner which invariably has 0.014 in. taper and 0.006 in. out of round, and number six liner which will be 0.011 in. taper and 0.005 in. out of round. This is accountable by the location of the water pump in front of the cylinder block. The hard material cylinder liners are not practical, due to the fact that the hard liner has a different co-efficient expansion to the cast malleable block and motors equipped with such liners will run in the boiling temperature

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The accepted process for restoring pistons to original factory fit.

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Longer life for brake linings . . . EXTRA strength for sudden stops . . . Mirror-finished and distortion-proof.

Developed by MEEHANITE RESEARCH INSTITUTE, Pittsburgh, Pa. in cooperation with GENERAL FOUNDRY & MANUFACTURING CO., Flint, Mich.

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LOCALIZED — ACCURATE — RAPID GRINDING.
Will Refinish any Flat, Scored, Tapered or Babbitt-smeared Crankpin Worthy of Repair.

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range at working speeds. They must be set into cylinder block with greater clearance, which in turn will have a cylinder rocking action in the block making it difficult to hold the seal at the bottom, causing water leakage into the crankcase. Also, unless some oil ring is used the oil consumption is quite heavy for a long period of time.

The chromium plating of prepared liners has shown considerable possibilities, if the cost of application could be brought down to a reasonable figure, and it does require considerable care to apply it to such surfaces as a cylinder. Our experience has been that the local electro-plating concerns who are reliable are reluctant to mess around with it, although one set of chromium liners exceeded 267,000 miles of service with reading of 0.004 in. taper and 0.003 in. out of round before the peeling off of material began to show.

Tire service is another problem, of course, and time is too short to discuss it fully here. We recap our tires and repair damaged casings, and find it very successful. We regroove tires in wet or cold weather, but do not do so in summer when the roads are clean and dry. Our average miles per tire, not including mileage after recap, is over 67,000 miles, depending considerably on the size. Front wheel tires will do around 78,000 miles, and we use only new tires on front wheels. On the four-wheel drive the tires on drive wheels must be carefully measured and matched to avoid differential wear. Old repaired and recapped tires are used on trailers. The air pressure in all tires is carried at 100 lb.

Batteries, if kept clean and secure and properly filled with water, will give in excess of two and one-half years of service.

No particular lubricating oil is standard with us. In some operations we are doing very good with straight mineral mid-continent and eastern stocks. On the mountainous operations of the supercharged vehicles the so-called compounded lubricating oil is being tried out. All lubricants are used 5000 miles in diesel engines before draining.

Relative to fuel oils, we are like other operators. More or less, every operator of these vehicles recognizes

(TURN TO NEXT PAGE, PLEASE)

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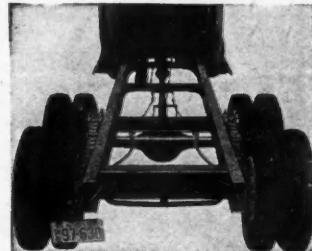
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Elastic Stop SELF-LOCKING NUTS

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Greater tonnage . . . more profit. Increase carrying capacity up to 20 tons. Extend frame to any desired length. Load kept in perfect balance . . . no teeter or end-sway. Simple, sturdy, no intricate parts. Timken bearings; steel castings; hydraulic brakes. Easily installed in 3 hours. 3 sizes. **LOW COST**.

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Also makers Little Giant Frame Extensions, Hand Hoists, Wrecking Cranes.

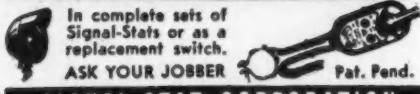
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Without Loss of Power

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TRUCK TRANSMISSIONS

For easy shifting, quiet operation, hauling power and dependability, be sure to choose trucks equipped with FULLER'S.

FULLER MFG. CO.
KALAMAZOO, MICH.

(CONTINUED FROM PAGE 119)

the need of approved fuel specifications. Standardization has been suggested, but there are pros and cons. Cleanliness of fuel still is considered to be an item of greatest importance. Experience indicates that the refiner now is doing a fairly thorough job of removing foreign particles of dust and dirt, however, the present concern is with gummy material, such as heavy lacquer or tarry substances which exist more or less in solution at the time fuel leaves the refinery. An excess amount of such heavy ends gives trouble all along the line from fuel filter to combustion chambers. Ignition quality as indicated by cetane number is of value in the matter of starting and warming up a motor and in the matter of smooth combustion, but it has very little, if any, value so far as fuel economy is concerned, for the outstanding advantage of the diesel motor use in automotive vehicles lies in its low cost fuel, and the operator needs plenty of this.

Today another low cost butane fuel is available to the operator, which merits his investigation.

True, it requires some special equipment to convert a gasoline motor to its use, but the most of this equipment can readily be realized in the difference in fuel cost per gallon within one year, depending of course on the gallonage used. The torque characteristics of gasoline motor converted to butane fuel will not be in proportion to a diesel motor. Butane being a dry gas has no carbon, which in turn means considerably longer engine life. There is no diluting of crankcase oil and it is not unusual to operate 11,000 miles before oil change is made. Valve grinds are not as frequent. Since converting from gasoline to butane we have been able to cut maintenance hours down from three to one and one-half hours per 10,000 miles. Miles per gallon received from butane fuel is the same as gasoline. Tuning of motor on butane fuel should be done with a Gas-Analyzer, for the line of poor performance is right alongside of good performance. It is essential that a valve and upper cylinder oil be used with this fuel.

END

(Please resume your reading on pg. 24)

HARRIS BROS.
TRANSFER CO.
recommends

Thermoid

CUSTOM-BUILT SETS
CBB SETS
THERMO-BLOCKS

Thermoid
THERMOID COMPANY - TRENTON, N.J.

For running-in-new and rebuilt engines use auxiliary lubricants containing "dag"® Brand colloidal graphite.

Acheson Colloids Corporation

Port Huron — dag — Michigan

*REG. U. S. PAT. OFF.

GUNK • The High Performance Motor Block and Chassis Degreaser



• Eliminates fire hazard . . . costs no more to use than oily, ineffective kerosene or similar petroleum solvents • Ask for literature.

CURRAN CORP • MFG. Chemists • Malden, Mass.

TRADE MARK
NOC-OUT THE HOSE CLAMP WITH THE THUMB SCREW
Use Noc-Out Hose Clamps . . . the standard of the automotive industry, for quick tightening, perfect all-around seal on your hose connections. They have the extra margin of strength which makes them the leading automotive hose clamp. Type "A" Adjustable—will fit many hose sizes. Type GBB, solid band, heavy duty clamp for Booster Brakes. GHG for all types of heater hose.

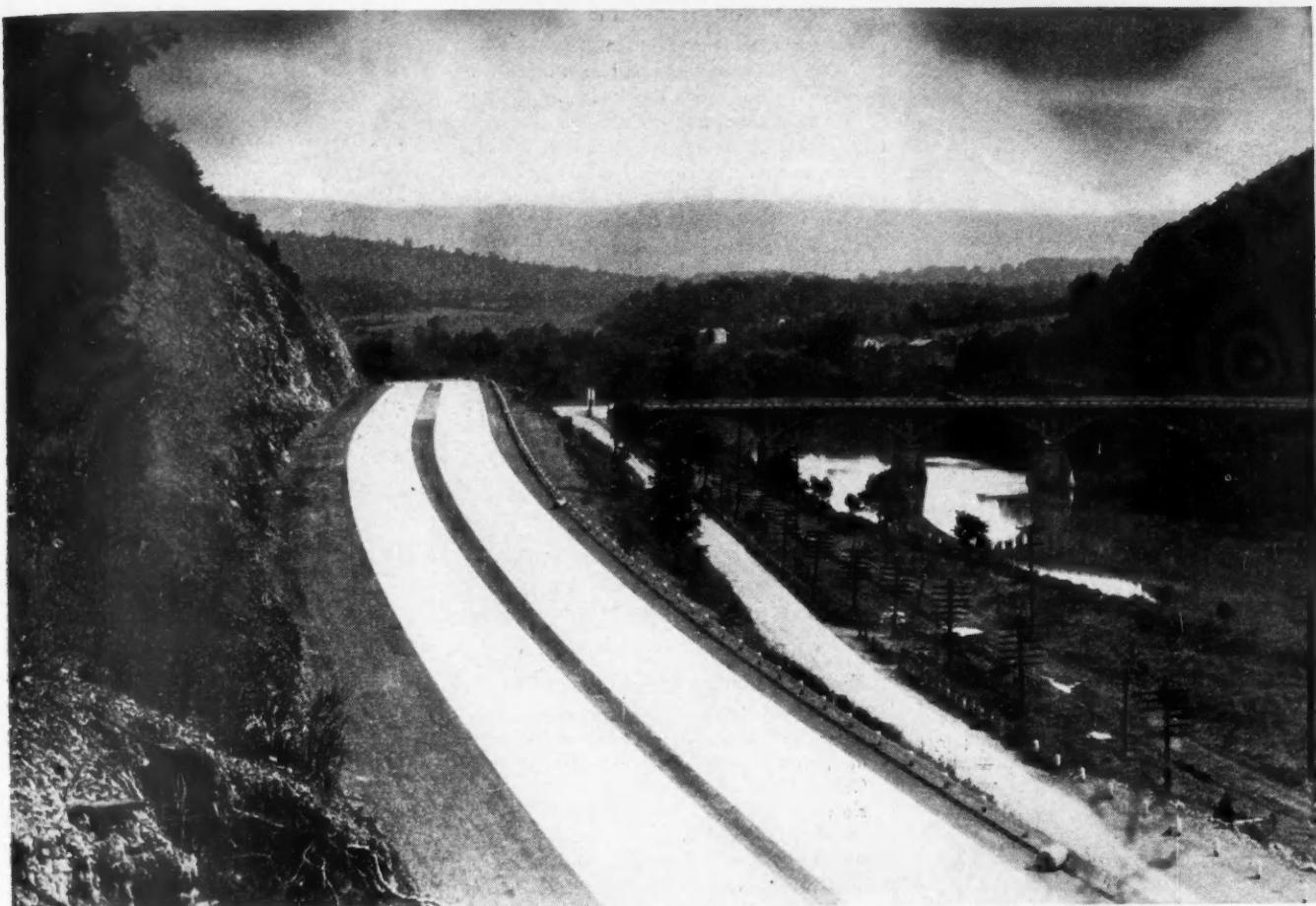
WITTEK MFG. CO.
4305 W. 54th PL., CHICAGO, U.S.A.

LOWER YOUR FILTER MAINTENANCE COSTS

MICHIANA
Duo-Flo
OIL FILTERS

Write for Bulletin 839
MICHIANA PRODUCTS CORPORATION
Michigan City, Ind.





The New Pennsylvania
High Speed Super-Highway

Millions of **MILES • VEHICLES • DOLLARS**

With more than 31 million motor vehicles traveling on better than 3 million miles of highways in the United States today, the 200,000* readers of MOTOR AGE have an important and profitable job to do.

They operate 50,000 better general service stations, independents and important service shops operated by outlets who also sell cars.

They represent the leading manufacturers of complete vehicles, parts, supplies, accessories, services, tools, shop equipment, etc., as retail outlets and sales establishments.

That is why we recommend MOTOR AGE for your 1941 automotive advertising schedule. Its subscribers are selected to take the waste out of circulation. Its rate is set to take the premium out of price. It is the business paper buy of the year.

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Chestnut and 56th Streets

A CHILTON Publication

Philadelphia, Penna.

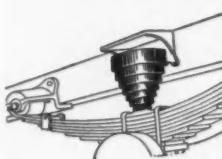
REDUCE
TON-MILE COSTS
ON SEVERE
SCHEDULES WITH
PRECISION-
MANUFACTURED

AUTOCAR TRUCKS

ARDMORE, PA. AND LEADING CITIES

BORDICK Body Buoy

*The Auxiliary Spring that Floats
the Load*



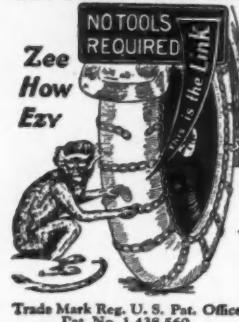
Standard Assemblies
for all makes of commercial and passenger vehicles.

Bordick Springs engineered to specifications for every chassis purpose—front or rear—regardless of weight or size.

We solicit your load suspension problems.

BORDICK STEEL PRODUCTS INC.
Special Eng. Dept. DETROIT, MICH.

SELF-CLOSING MONKEY LINK



Trade Mark Reg. U. S. Pat. Office
Pat. No. 1,438,560

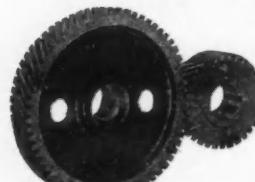
All sizes of MONKEY LINKS

FREE SAMPLE
to
FLEET OWNERS.
State number of
trucks in fleet and
size of chains.

**FLOWER CITY
SPECIALTY CO.**
Rochester, N. Y.,
or Your Jobber

CLOYES

The PRECISION Timing Gear



For precision in timing and a longer, quieter service life, CLOYES TIMING GEARS are recommended and approved by fleet engineers.

CLOYES . . . the gears DESIGNED to FIT!

CLOYES GEAR WORKS
17214 Roseland Road, N. E., CLEVELAND, OHIO

Free BOOK TELLS WHY

10 out of 12 MAINTENANCE AWARD WINNERS USE DELUXE OIL FILTERS

Write for Filter Facts Booklet explaining exclusive features such as No Cartridge Collapse, Pressure Relief Valve, Sump Drain-Off Valve, Catch-Basin Sump. DeLuxe Products Corp., 1406 Lake St., LaPorte, Indiana, 144 Front St., W., Toronto, Ontario, Canada.

\$287,000,000 Needed for Highways

Immediate appropriations totaling \$287,000,000 was recommended in a report just submitted to the President by Federal Works Administrator Carmody. Based on a survey made by the Public Roads Administration, the report recommends \$150,000,000 for access roads, \$25,000,000 for tactical roads and \$112,000,000 for the strategic highway system.

In his letter of submission to Mr. Carmody, Commissioner of Public Roads MacDonald made this comment: "At the very moment England was imposing limitations upon the motor truck, Germany was subsidizing its use and, as a major national policy, engaging on a magnificent scale in the construction of a national system of super-highways."

SAE Summer Meeting

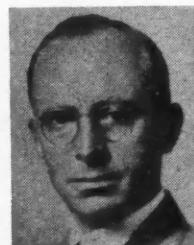
The summer meeting of the Society of Automotive Engineers will be held at The Greenbrier, White Sulphur Springs, W. Va., June 1 to 6.

Fruehauf Trailer Order

Fruehauf Trailer Co. has received an order for 158 trailers, 140 of them to be of the latest stainless steel type, from Consolidated Motor Freight Lines of Hartford, Conn. In addition, Consolidated is reported to have ordered 36 large tractor units from GMC, several from Autocar, 22 from Chevrolet.

Pawling Refining Corp. Formed

A. S. Pawling, formerly with Esso Marketers and later president of Major Marketing Co., has formed the Pawling Refining Corp. at Port Chester, N. Y. Latest product to be announced is a specially treated castor oil, said to be completely degummed by the exclusive "Paluszek Process." The company also manufactures an extensive line of special lubricants and other automotive chemicals.



A. S. Pawling

Reo Price Change

Price of the new Reo Model 25, described on page 40 of this issue, has been changed to \$3,686.

ENGINEERED TO MODERN AUTOMOTIVE STANDARDS . . .



Schrader
TIRE VALVES

A. SCHRADER'S SON, BROOKLYN, N. Y.
Division of Scovill Manufacturing Company, Incorporated

CORE is replaceable in a few seconds, with tire right on wheel.
CAP seals valve mouth—shuts out dirt—keeps valve clean.

NEW!

Announcing

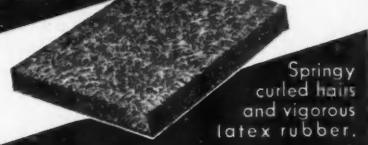
VALLEY SUPER-DUTY CHARGER

Eliminate Run Down Batteries for Low Cost Battery Mileage. The new, improved, Valley—Guaranteed (two years) charger connects to the lighting circuit . . . is easy and economical to operate . . . no moving parts. Now it is easy and inexpensive to obtain long battery life by maintaining efficient battery charge. Model SG-12 charges 1 to 12 6 volt batteries. **NOW ONLY \$28.00**

Valley Electric Corporation
4221 Forest Park Boulevard St. Louis, Mo.

HAIRFLEX

Upholstering material
for truck seats
and backs.



Springy
curled hairs
and vigorous
latex rubber.

ARMOUR AND COMPANY
CURLLED HAIR DIVISION
Chicago Illinois

JONES PORTABLE TACHOMETER

The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y., Shell Petroleum Co., Atlantic Refining Company, Tidewater Oil Company, Keeshin Motor Express, Mack Trucks, Brockway, U. S. Navy. Direct, instantaneous reading

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BY MEN WHO KNOW FLARES BEST

BOLSER FLARES !
THE NATION'S CHOICE

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**A 5th
WHEEL
FOR
EVERY
PURPOSE**



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AMERICAN STEEL FOUNDRIES
EAST CHICAGO, INDIANA